



# SAFETY DATA SHEET

## 1,2,4-Triazole

### Section 1. Identification

**GHS product identifier** : 1,2,4-Triazole  
**Chemical name** : 1,2,4-Triazole  
**Other means of identification** : Not available.  
**Product type** : Powder.

#### Identified uses

Corrosion inhibitors.

**Supplier's details** : Connect Chemicals USA  
7000 Peachtree Dunwoody Rd.  
Building 9, Suite 100  
Atlanta, GA 30328  
Tel : (678) 947-4410  
Fax : (678) 947-4110  
Toll free : 888-58-Connect (82-6663)

**Emergency telephone number (with hours of operation)** : CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3887  
24/7

### Section 2. Hazards identification

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Classification of the substance or mixture** : ACUTE TOXICITY (oral) - Category 4  
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2  
TOXIC TO REPRODUCTION (Unborn child) - Category 2

#### GHS label elements

##### Hazard pictograms



##### Signal word

: Warning

##### Hazard statements

: Harmful if swallowed.  
Causes serious eye irritation.  
Suspected of damaging the unborn child.

#### Precautionary statements

##### General

: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

##### Prevention

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear eye or face protection. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.



## Section 2. Hazards identification

- Response** : IF exposed or concerned: Get medical attention. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
- Storage** : Store locked up.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Hazards not otherwise classified** : Fine dust clouds may form explosive mixtures with air. Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

## Section 3. Composition/information on ingredients

- Substance/mixture** : Substance
- Chemical name** : 1,2,4-Triazole
- Other means of identification** : Not available.

### CAS number/other identifiers

- CAS number** : 288-88-0
- Product code** : Not available.

Ingredient name	%	CAS number
1,2,4-Triazole	60 - 100	288-88-0

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First aid measures

### Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Flush contaminated skin with plenty of water. Continue to rinse for at least 20 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

## Section 4. First aid measures

- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : Harmful if swallowed. Irritating to mouth, throat and stomach.

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness
- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing  
reduced fetal weight  
increase in fetal deaths  
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:  
reduced fetal weight  
increase in fetal deaths  
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:  
reduced fetal weight  
increase in fetal deaths  
skeletal malformations

### Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### Extinguishing media

**Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.

**Unsuitable extinguishing media** : None known.

**Specific hazards arising from the chemical** : No specific fire or explosion hazard.

**Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
nitrogen oxides

**Special protective actions for fire-fighters** : No special measures are required.

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

**For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### Methods and materials for containment and cleaning up

**Small spill** : Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

**Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing dust. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

None.

- Appropriate engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : In some cases, dust collection, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. If operating conditions cause high dust concentrations to be produced, use dust goggles.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

## Section 8. Exposure controls/personal protection

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

## Section 9. Physical and chemical properties

### Appearance

- Physical state** : Solid. [Powder.]
- Color** : White.
- Odor** : Not available.
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : 120 to 121°C (248 to 249.8°F)
- Boiling point** : 260°C (500°F)
- Flash point** : Closed cup: 170°C (338°F)
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : 0 kPa (0 mm Hg) [room temperature]  
0.0027 kPa (0.02 mm Hg) [50°C]
- Vapor density** : Not available.
- Relative density** : Not available.
- Solubility** : Not available.
- Solubility in water** : 1250 g/l
- Partition coefficient: n-octanol/water** : -0.58
- Auto-ignition temperature** : 490°C (914°F)
- Decomposition temperature** : >290°C (>554°F)
- Viscosity** : Not available.

## Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : No specific data.

## Section 10. Stability and reactivity

**Incompatible materials** : Reactive or incompatible with the following materials: oxidizing materials.

**Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
1,2,4-Triazole	LD50 Dermal	Rat	3129 mg/kg	-
	LD50 Oral	Rat	1375 mg/kg	-

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
1,2,4-Triazole	Eyes - Severe irritant	Rabbit	-	50 mg	-
	Skin - Mild irritant	Rabbit	-	0.5 g	-

#### Sensitization

There is no data available.

#### Carcinogenicity

There is no data available.

#### Specific target organ toxicity (single exposure)

There is no data available.

#### Specific target organ toxicity (repeated exposure)

There is no data available.

#### Aspiration hazard

There is no data available.

**Information on the likely routes of exposure** : Dermal contact. Eye contact. Inhalation. Ingestion.

### Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : Harmful if swallowed. Irritating to mouth, throat and stomach.

### Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness
- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing  
reduced fetal weight  
increase in fetal deaths  
skeletal malformations



## Section 11. Toxicological information

**Skin contact** : Adverse symptoms may include the following:  
reduced fetal weight  
increase in fetal deaths  
skeletal malformations

**Ingestion** : Adverse symptoms may include the following:  
reduced fetal weight  
increase in fetal deaths  
skeletal malformations

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

**Potential immediate effects** : No known significant effects or critical hazards.

**Potential delayed effects** : No known significant effects or critical hazards.

#### Long term exposure

**Potential immediate effects** : No known significant effects or critical hazards.

**Potential delayed effects** : No known significant effects or critical hazards.

#### Potential chronic health effects

**General** : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

**Teratogenicity** : Suspected of damaging the unborn child.

**Developmental effects** : No known significant effects or critical hazards.

**Fertility effects** : No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

There is no data available.

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Result	Species	Exposure
1,2,4-Triazole	Acute EC50 98.1 ppm Fresh water Acute LC50 498 ppm Fresh water	Daphnia - Daphnia magna Fish - Oncorhynchus mykiss	48 hours 96 hours

### Persistence and degradability

There is no data available.

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
1,2,4-Triazole	-0.58	1	low

### Mobility in soil



## Section 12. Ecological information

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Other adverse effects** : No known significant effects or critical hazards.

## Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	<b>DOT Classification</b>	<b>IMDG</b>	<b>IATA</b>
<b>UN number</b>	Not regulated.	Not regulated.	Not regulated.
<b>UN proper shipping name</b>	-	-	-
<b>Transport hazard class(es)</b>	-	-	-
<b>Packing group</b>	-	-	-
<b>Environmental hazards</b>	No.	No.	No.
<b>Additional information</b>	-	-	-

**AERG** : Not applicable.

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** : Not available.

## Section 15. Regulatory information

**U.S. Federal regulations** : TSCA 8(a) CDR Exempt/Partial exemption: Not determined  
 United States inventory (TSCA 8b): This material is listed or exempted.

**Clean Air Act Section 112** : Not listed

**(b) Hazardous Air Pollutants (HAPs)**

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

### SARA 302/304

#### Composition/information on ingredients

No products were found.

**SARA 304 RQ** : Not applicable.

### SARA 311/312

**Classification** : Immediate (acute) health hazard  
 Delayed (chronic) health hazard

#### Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
1,2,4-Triazole	60 - 100	No.	No.	No.	Yes.	Yes.

### State regulations

**Massachusetts** : This material is not listed.

**New York** : This material is not listed.

**New Jersey** : This material is not listed.

**Pennsylvania** : This material is not listed.

### California Prop. 65

No products were found.

## Section 16. Other information

### History

**Date of issue mm/dd/yyyy** : 02/15/2014

**Date of previous issue** : 08/15/2006

**Version** : 2

**Revised Section(s)** : 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

**Prepared by** : KMK Regulatory Services Inc.

## Section 16. Other information

### Key to abbreviations

- : ATE = Acute Toxicity Estimate  
BCF = Bioconcentration Factor  
GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
IATA = International Air Transport Association  
IBC = Intermediate Bulk Container  
IMDG = International Maritime Dangerous Goods  
LogPow = logarithm of the octanol/water partition coefficient  
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
UN = United Nations

### Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



# Material Safety Data Sheet

<b>NFPA</b>	<b>Transport Symbol</b>
	Not regulated

Preparation Date 09-Jun-2006

Revision Date 11-Mar-2008

Revision Number 2

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Code** 1205610  
**Product Name** BETA NAPHTHOL  
**Synonyms** 2-Naphthalenol  
**Formula** C<sub>10</sub>H<sub>8</sub>O  
**CAS Number** 135-19-3  
**Contact**  
ACETO CORPORATION  
One Hollow Lane  
Lake Success, NY 11042-1215  
Phone: (516) 627-6000  
Fax: (516) 627-6093  
Email: regulatory@aceto.com  
**ChemTrec Emergency Telephone Numbers** 1-800-424-9300  
1-703-527-3887

## 2. HAZARDS IDENTIFICATION

### Emergency Overview

Harmful by inhalation. Harmful if swallowed. May be harmful in contact with skin. Irritant. Dangerous for the environment. Very toxic to aquatic organisms. Sensitivity to light.

**Appearance** White, to, Brown, Crystalline, Powder.

**Physical State** Solid.

**Odor** Phenol-like

### OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

### Mexico - Grade

Slight risk, Grade 1

### Potential Health Effects

#### Principle Routes of Exposure

Eye contact, Skin contact, Inhalation, Ingestion.

#### Acute Effects

##### Eyes

Irritating to eyes. Visual disturbances. Avoid contact with eyes.

<b>Skin</b>	May be harmful by skin contact. Irritating to skin. Avoid contact with skin.
<b>Inhalation</b>	Harmful by inhalation. Irritating to mucous membranes. Irritating to respiratory system.
<b>Ingestion</b>	Harmful if swallowed. May cause irritation of the digestive tract.
<b>Chronic Effects</b>	Abdominal pain. Nausea. Vomiting. Convulsions. Intestinal and percutaneous absorption may lead to severe nephritis, liver injury and acute hemolytic anemia. Depending on intensity of exposure, effects may vary from mild irritation to severe destruction of tissue.

See Section 11 for additional Toxicological information.

**Aggravated Medical Conditions** Not available

**Interactions with Other Chemicals** Not available

**Potential Environmental Effects** Dangerous for the environment. Very toxic to aquatic organisms. Avoid release to the environment.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**CAS Number** 135-19-3

**Formula** C<sub>10</sub>H<sub>8</sub>O

#### Hazardous Components

Chemical Name	CAS-No	Weight %
2-Naphthol	135-19-3	60 - 100

### 4. FIRST AID MEASURES

<b>General Advice</b>	Show this safety data sheet to the doctor in attendance.
<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Consult a physician.
<b>Skin Contact</b>	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. Consult a physician.
<b>Inhalation</b>	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Consult a physician.
<b>Ingestion</b>	Do not induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Consult a physician.
<b>Notes to Physician</b>	Treat symptomatically
<b>Protection of First-aiders</b>	Use personal protective equipment. Avoid contact with skin, eyes and clothing.

**5. FIRE-FIGHTING MEASURES**

Flammable Properties	Not available
Suitable Extinguishing Media	Carbon dioxide (CO2). Dry powder. Foam.
Unsuitable Extinguishing Media	Not available
Hazardous Combustion Products	Thermal decomposition or combustion may produce hazardous gases and/or materials.

**Explosion Data**

Sensitivity to mechanical impact	Not available
Sensitivity to static discharge	Not available

**Specific Hazards Arising from the Chemical**

Keep product and empty container away from heat and sources of ignition

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

**NFPA**

Health 2

Flammability 1

Instability 0

**6. ACCIDENTAL RELEASE MEASURES**

Personal Precautions	Evacuate personnel to safe areas. Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. In case of insufficient ventilation, wear suitable respiratory equipment.
Environmental Precautions	Local authorities should be advised if significant spillages cannot be contained.
Methods for Containment	Not available
Methods for Cleaning up	Evacuate personnel to safe areas. Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Clean contaminated surface thoroughly.
Other Information	Not applicable

**7. HANDLING AND STORAGE**

Handling	Use only in an area equipped with a safety shower. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation. Do not breathe vapours/dust. Avoid contact with skin, eyes and clothing. Avoid repeated exposure.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from light. May discolor on exposure to light.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>Exposure Guidelines</b>	This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.
<b>Engineering Controls</b>	Ensure adequate ventilation, especially in confined areas.
<b>Personal Protective Equipment</b>	
<b>Eye/face Protection</b>	Tightly fitting safety goggles.
<b>Skin Protection</b>	Protective gloves.
<b>Respiratory Protection</b>	In case of insufficient ventilation wear suitable respiratory equipment.

**General Hygiene Considerations**

When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	White, to, Brown, Crystalline, Powder
<b>Physical State</b>	Solid
<b>Odor</b>	Phenol-like
<b>pH</b>	Not available
<b>Flash Point</b>	153°C
<b>Method</b>	Closed cup
<b>Autoignition Temperature</b>	550°C
<b>Boiling Point/Range</b>	285 - 286°C
<b>Melting Point/Range</b>	121 - 123°C
<b>Flammability Limits in Air</b>	Lower Not available      Upper Not available
<b>Vapor Pressure</b>	< 0.1 hPa @ 20 °C
<b>Vapor Density</b>	4.97 g/L
<b>Specific Gravity</b>	1.217 g/cm3
<b>Water Solubility</b>	0.6g/L @ 25 °C
<b>Reactivity in Water</b>	Not available
<b>Molecular Weight</b>	144.17

## 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Stable under normal conditions
<b>Conditions to Avoid</b>	Heat, flames and sparks. Protect from light. Contact with metal may evolve flammable hydrogen gas.
<b>Incompatible Materials</b>	Strong oxidizing agents. Strong bases. Acid chlorides. Acid anhydrides. Antipyrine. Camphor. Ferric salts. Menthol. Phenols. Potassium permanganate. Urethane. Acids.
<b>Hazardous Decomposition Products</b>	Carbon monoxide, Carbon dioxide (CO2).
<b>Possibility of Hazardous Reactions</b>	None under normal processing



## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
2-Naphthol	= 1960 mg/kg Oral LD50 Rat	> 10 g/kg Dermal LD50 Rabbit	= 2.2 mg/L Inhalation LC50 Rat 4 h > 770 mg/m <sup>3</sup> Inhalation LC50 Rat 1 h

### Chronic Toxicity

Carcinogenicity	There are no known carcinogenic chemicals in this product
Irritation	Skin,rabbit: 500 mg 24H MLD; Eye,rabbit: 100 mg MOD
Corrosivity	Not available
Sensitization	Not available
Neurological Effects	Not available
Mutagenic Effects	Not available
Reproductive Effects	Not available
Developmental Effects	Not available
Target Organ Effects	Eyes.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

Dangerous for the environment. Very toxic to aquatic organisms. Avoid release to the environment.

#### 2-Naphthol

##### **Freshwater Algae Data**

= 18.8 mg/L EC50 *Selenastrum capricornutum* 4 h

##### **Microtox Data**

= 0.22 mg/L EC50 *Photobacterium phosphoreum* 5 min  
 = 0.24 mg/L EC50 *Photobacterium phosphoreum* 15 min  
 = 0.27 mg/L EC50 *Photobacterium phosphoreum* 30 min

##### **Water Flea Data**

= 19.8 mg/L EC50 water flea 48 h Static  
 = 3.54 mg/L EC50 *Daphnia magna* 48 h

### **Persistence / Degradability**

Not available

Bioaccumulation / Accumulation	Not available
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Mobility in Soil	Not available
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2-Naphthol

log Pow = 2.84

**13. DISPOSAL CONSIDERATIONS**

Waste Disposal Method	Contact waste disposal services. Dispose of in accordance with local regulations.
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Contaminated Packaging	Dispose of in accordance with local regulations. Empty containers should be taken for local recycling, recovery or waste disposal.
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US EPA Waste Number	Not available
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**14. TRANSPORT INFORMATION**

<u>DOT</u>	Not regulated
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<u>TDG</u>	Not regulated
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<u>MEX</u>	Not regulated
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<u>ICAO</u>	Not regulated
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<u>IATA</u>	Not regulated
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<u>IMDG/IMO</u>	Not regulated
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<u>RID</u>	Not regulated
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<u>ADR</u>	Not regulated
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<u>ADN</u>	Not regulated
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**15. REGULATORY INFORMATION**International Inventories

U.S.A. (TSCA)	Complies
Canada (DSL)	Complies
EU (ELINCS)	Does not Comply
EU (EINECS)	Complies
Japan (ENCS)	Complies
China	Complies

## 1205610 - BETA NAPHTHOL

Korea (KECL) Complies  
Philippines (PICCS) Complies  
Australia (AICS) Complies

Chemical Name	U.S.A. (TSCA)	Canada (DSL)	EU (EINECS)	EU (ELINCS)
2-Naphthol	Present	Present	205-182-7	-

Chemical Name	Japan (ENCS)	China	Korea (KECL)	Philippines (PICCS)	Australia (AICS)
2-Naphthol	4-355 4-0355	Present	97-3-36	Present	Present

**USA****Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

**Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)**

This product does not contain any HAPs.

Chemical Name	CAS-No	VOCs
2-Naphthol	135-19-3	Present

**State Regulations****California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**State Right-to-Know****Canada**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

**WHMIS Hazard Class**

Not determined

**16. OTHER INFORMATION**

Prepared By	Environmental Health and Safety, Regulatory Affairs
Preparation Date	09-Jun-2006
Revision Date	11-Mar-2008
Revision Summary	Not available

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS

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## Safety Data Sheet

Boric Acid Normal Sulfate Granular

### Section 1 - Chemical Product and Company Identification

**GHS Name:** BORIC ACID

**Chemical Name:** Boric Acid, Boracic Acid, Ortho Boric Acid

**Company Identification:**

**Manufacturer:** ETI MADEN MINES AND PRODUCTS, Turkey

Bahçekapı Mah. Fatih Sultan Mehmet Bulvarı No:179 Postcode:06377  
Etimesgut / ANKARA, TÜRKİYE  
PHONE : + 90 312 397 41 14

**Supplied By:** Etimine USA, Inc; One Penn Center West; Suite# 400  
Pittsburgh, PA 15276  
Telephone: (412) 809-8215; Fax: (412) 809-8217

**Emergency Number:** CHEMTREC 1-800-262-8200/ (703) 741-5500

### Section 2 – Hazard Identification

#### EMERGENCY OVERVIEW

#### WARNING!

May cause harm to the unborn child and may impair fertility based on animal studies.  
Irritating to eyes and skin. May affect central nervous system.

**Appearance:** White  
**odor:** odorless

**Physical State:** Crystalline Granular Powder Solid

**EMERGENCY OVERVIEW:** Boric Acid is a white odorless, powdered substance that is not flammable, combustible, or explosive, and it presents no unusual hazard if involved in a fire. Boric Acid presents little or no hazard (to humans) and has low acute oral and dermal toxicities. Care should be



taken to minimize the amount of Boric Acid released to the environment to avoid ecological effects.

**ROUTES OF EXPOSURE:** In the occupational setting, inhalation is the most important route of exposure. Dermal absorption is usually not important because Boric Acid is not absorbed through the intact skin.

**INHALATION:** Mild irritation to nose and throat may occur when the PEL or TLV are exceeded (see Section 15).

**EYE CONTACT:** Exposure to Boric Acid dust does not cause eye irritation in normal industrial use.

**DERMAL CONTACT:** Boric Acid is non-irritating to the intact skin. Can be readily absorbed through broken or abraded skin.

**INGESTION:** Boric Acid products are not intended for ingestion. Amounts greater than one teaspoonful, when ingested, may cause gastrointestinal problems.

**CANCER:** Boric Acid is not considered a carcinogen.

**REPRODUCTIVE:** A human study of occupationally exposed Borate worker population showed no adverse reproductive effects. Animal studies of similar organic Borates demonstrated reproductive effects in males.

**TARGET ORGANS:** No target organs have been determined in humans. High dose animal ingestion studies indicate that the testes is the target organ.

#### **SIGNS AND SYMPTOMS OF EXPOSURE:**

Symptoms of accidental over-exposure to Boric Acid have been associated with ingestion or by absorption through large areas of damaged skin. These may include nausea, vomiting, and diarrhea, with delayed effects of skin redness and peeling. See Section 4 also.

See Section 11 for details on Toxicological Data.

**NOTE:** See Section 15 for Exposure Limits.

Boric Acid is hazardous under the OSHA Hazard Communication Standard based on animal chronic toxicity studies of similar organic Borates; see Section 11 for details on Toxicological Data.

#### **Hazard Symbols:**





**Risk Phrases: Risk Phrase(s):** **Repro Toxicity Category: 2.**  
**R60: May impair fertility.**  
**R61: May cause harm to the unborn child.**

**Hazard Statement:**

Signal word (GHS-US) :	Danger
Hazard statements (GHS-US) :	H360 - May damage fertility or the unborn child
Precautionary statements (GHS-US) :	P201 - Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood P280 - Wear protective gloves, eye protection P308+P313 - IF exposed or concerned: Get medical advice/attention P405 - Store locked up P501 - Dispose of contents/container to comply with local, state and federal regulations

**Section 3 – Product Identification**

CAS#	Chemical Name	Formula	Mol. Wt.	Percent	EINECS/ELINCS
10043-35-3	Boric Acid	H3BO3	61.83	>99.9	233-139-2

**Section 4 - First Aid Measures****HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION:** Harmful if swallowed or inhaled. Causes moderate eye irritation. Avoid contact with eyes or clothing. Avoid breathing dust. Wash thoroughly with soap and water after handling.  
Remove contaminated clothing and wash clothing before reuse.

**STATEMENT OF PRACTICAL TREATMENT:**

**If swallowed:** Call a physician or poison control center. Do not induce vomiting.

**If Inhaled:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably by mouth-to-mouth. Get medical attention.

**If in Eyes:** Flush eyes with plenty of water. Call a physician if irritation persists.



**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

<b>General Hazard:</b>	Boric Acid is not flammable, combustible, or explosive. Boric Acid presents no unusual hazards when involved in a fire. This product is an inherent fire retardant.
<b>UEL/LEL:</b>	Not Applicable
<b>Flash Point:</b>	Not Applicable
<b>Auto-ignition:</b>	Not Applicable
<b>Flammability:</b>	Non-flammable solid.
<b>Class:</b>	Flammability Classification (29 CFR 1910.1200)
<b>Extinguishing Media:</b>	Any fire extinguishing media may be used on nearby fires.

<b>NFPA Rating</b>	Health 2	Flammability 0	Reactivity 0	Phys Haz N/A
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## Section 6 - Accidental Release Measures

### ENVIRONMENTAL HAZARD:

<b>Personal Precautions:</b>	Use personal protective equipment. Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing.
<b>Environmental Precautions:</b>	Should not be released into the environment.
<b>Methods for Containment and Clean Up</b>	<p>Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation.</p> <p>Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.</p>

## Section 7 - Handling and Storage



**[It is a violation of Federal Law to use this product in a manner inconsistent with its labeling]**

- Caution:** **Keep out of Reach of Children**
- Hygienic Practices:** Wash hands thoroughly with soap and water after handling, and before eating, drinking, or smoking.
- Storage & Disposal:** Do not contaminate water, food or feed by storage or disposal. Notify local authority and contact your State Water Board or Regional Office of the EPA for guidance.
- Storage:** Store in a cool, dry area away from heat and strong reducing agents.
- Container Disposal:** Completely empty bags into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Observe all Federal, state and local regulations concerning disposal of waste pesticide and containers.

**FORMULATORS AND REPACKAGERS USING THIS PRODUCT ARE RESPONSIBLE FOR OBTAINING ENVIRONMENTAL PROTECTION AGENCY (EPA) REGISTRATION FOR THEIR PRODUCTS.** [Refer to PR Notice 95-1 for the applicability of the *Environmental Hazards* statement to your product]

This product is a soluble inorganic powder which may be used for the formulation of products for the following **registered end-use patterns:**

- i. Algaecides for water treatment in swimming pools.
- ii. Bacteriostats for use in impregnating or otherwise applying to absorbent material(s) to inhibit the growth of odor-causing bacteria when applied at a rate of 0.015 to 0.37% w/w (approximately) equivalent boron.
- iii. Insecticides for mop, spot and crack and crevice treatment in homes, residential, industrial, institutional and commercial buildings and in transportation equipment.
- iv. Insecticide/fungicide for wood treatment.

## Section 8 - Exposure Controls, Personal Protection

### Exposure Guidelines:

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One Penn Center West, Suite 400, Pittsburgh, PA 15276 · Phone: 412-809-8215 · Fax: 412-809-8217  
Email: [etimineusa@etimineusa.com](mailto:etimineusa@etimineusa.com) · Website: [www.etimineusa.com](http://www.etimineusa.com)

Product	ACGIH TLV	OSHA PEL	NIOSH IDLH
<b>Boric Acid US</b>	<b>TWA 2mg/m<sup>3</sup> STEL 6mg/m<sup>3</sup></b>	<b>Total Dust: 15mg/m<sup>3</sup> Respirable Dust: 5mg/m<sup>3</sup></b>	
			<b>TWAEV</b>
<b>Boric Acid Canada</b>			<b>TWA 2mg/m<sup>3</sup> STEL 6mg/m<sup>3</sup></b>

- Engineering Controls:** Use local exhaust ventilation to keep airborne levels Below exposure limits (see Section 15).
- Eye Protection:** Use goggles or vented safety glasses in excessively dusty conditions.
- Skin Protection:** (Not required under normal conditions.) Use protection if excessively dusty or if skin is damaged.
- Respiratory Protection:** Use appropriate NIOSH/MSHA certified respirators when levels are expected to exceed exposure limits (see Section 15).

#### Personal Protective Equipment:

- Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
- Skin:** Wear appropriate protective gloves to prevent skin exposure.
- Clothing:** Wear appropriate protective clothing to prevent skin exposure.
- Respirators:** A respiratory protection program that meets OSHA's 29 CFR §1910.134 must be followed whenever workplace conditions warrant a respirator's use.

## Section 9 - Physical and Chemical Properties

- Physical State:** Solid
- Appearance:** White Granular Powder
- Odor:** Characteristic Odorless
- Molecular weight:** 61.83
- pH:** Very weak acid. pH ~4 for 4.7g/100ml solution.
- Vapor Pressure:** Not applicable. Not a volatile substance
- Vapor Density:** Not applicable
- Evaporation Rate:** Not applicable
- Viscosity:** Not applicable
- Boiling Point:** Not available



<b>Freezing/Melting Point:</b>	169 deg C
<b>Autoignition Temperature:</b>	Not applicable. Not a flammable substance.
<b>Flash Point:</b>	Not applicable
<b>Solubility:</b>	Soluble in Water, Methanol, Ethylene Glycol, Glycerol. (in water 4.7 wt%@20C; 27.5 wt%@100C)
<b>Specific Gravity/Density:</b>	1.51g/cm3
<b>Bulk Density:</b>	57-65 Lb/Cft

## Section 10 - Stability and Reactivity

<b>Chemical Stability:</b>	Stable under normal storage and handling conditions; forms partial hydrate in moist air. When heated, water is lost forming Metaboric Acid (HBO <sub>2</sub> ). On further heating, the material is converted to boric oxide (B <sub>2</sub> O <sub>3</sub> ).
<b>Conditions to Avoid:</b>	Incompatible materials, dust generation, heat.
<b>Incompatible Materials:</b>	Boric Acid reacts as a weak acid that may cause corrosion of base metals. Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas that could create an explosive hazard.
<b>Hazardous Decomposition:</b>	Not known.
<b>Hazardous Polymerization:</b>	Will not occur.

## Section 11 - Toxicological Information

Product	LD50 Oral	LD50 Dermal	LC50 Inhale(dust)
Boric Acid	3500-4100 mg/kg Rat	2000mg/kg Rabbit	>2.03 mg/L Rat 4h

<b>EYES:</b>	<b>Long</b> occupational exposure history indicates no human eye injury from exposure to Boric Acid.
<b>SKIN:</b>	Low acute dermal toxicity; LD50 for rabbits is expected to be greater than 2,000 mg/kg of body weight (test



conducted per 16 CFR 1500.41). Boric Acid is not absorbed through intact skin.

**INHALATION:**

Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposure to Boric Acid and Sodium Borate dust (See Section 4 also).

**INGESTION:**

Low acute oral toxicity; LD50 for Sprague-Dawley rats is 3,500 to 4,100 mg/kg of body weight. (See Section 4).

**CARCINOGENICITY:**

Boric Acid is not listed as a carcinogen by the Environmental Protection Agency (EPA), the State of California, or the International Agency for Research on Cancer (IARC). A report issued by the National Toxicology Program showed "no evidence of carcinogenicity" from a full two-year bioassay on Boric Acid on mice at feed doses of 2,500 to 5,000 ppm in the diet. No mutagenic activity was observed for Boric Acid in a recent battery of four short-term mutagenicity assays.

**REPRODUCTIVE:**

A human study of occupationally exposed Borate worker population showed no adverse reproductive effects. Animal studies indicate that Boric Acid reduces or inhibits sperm production, causes testicular atrophy, and, when given to pregnant animals during gestation, may cause developmental changes. These feed studies were conducted under chronic exposure conditions leading to doses many times in excess of those that could occur through inhalation of dust in the occupational setting.

**Teratogenicity:**

No information available.

**Reproductive Effects:**

No information available.

**Neurotoxicity:**

No information available.

**Mutagenicity:**

No information available.

**Other Studies:**

See actual entry in RTECS for complete information.

## Section 12 - Ecological Information

**NOTE:** Boron is the element in Boric Acid that is used to characterize Borate product ecological effects. To convert Boric Acid to boron multiply by 0.1748.



**FISH TOXICITY:**

Boron naturally occurs in seawater at an average concentration of 5 mg B/liter. In laboratory studies the acute toxicity (96-hr LC50) for under-yearling Coho salmon (*Onchorhynchus kisutch*) in seawater was determined as 40 mg B/L (added as Sodium Metaborate). The Minimum Lethal Dose for minnows exposed to Boric Acid at 20C for 6 hours is 18,000 to 19,000 mg/l in distilled water, 19,000 to 19,500 in hard water.

Rainbow trout:	24-day LC50 = 150.0 mg/B/L 36-day NOEC-LOEC = 0.75-1 mg/B/L
Goldfish:	7-day NOEC-LOEC = 26.50 mg/B/L 3-day LC50 = 178 mg/B/L

**BIRD TOXICITY:**

Dietary levels of 100 mg/kg resulted in reduced growth of female mallards. As little as 30 mg/kg fed to mallard adults adversely affected the growth rate of offspring.

**INVERTEBRATE TOXICITY:** Daphnids 48-hour LC50 = 133 mg/B/L  
1-day NOEC-LOEC = 6-13 mg/B/L

**PHYTOTOXICITY:**

Although boron is an essential micro-nutrient for healthy growth of plants, it can be harmful to boron-sensitive plants in higher quantities. Plants and trees can easily be exposed by root absorption to toxic levels of boron in the form of water-soluble Borate leached into nearby waters or soil. Care should be taken to minimize the amount of boron released to the environment.

**ENVIRONMENTAL FATE DATA:**

**Persistence/Degradation:** Boron is naturally occurring and is commonly found in the environment. Boric Acid decomposes in the environment to natural Borate.

**Soil Mobility:** The product is soluble in water and is leachable through normal soil.

## Section 13 - Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Disposal of container and unused contents must be carried out in accordance with the federal, state and local requirements.



Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

## Section 14 - Transport Information

Boric Acid is not classified as Hazardous substance for transport. It is not regulated by

US DOT: Unregulated

Canada TDG: As per WHIMS Class D2A



## Section 15 - Regulatory Information

### US Regulations:

**TSCA:** CAS# 10043-35-3 is listed on the TSCA inventory.  
**RCRA (40CFR 261):** None listed under any section.  
**CERCLA (SUPERFUND):** None listed under any section.  
**Health & Safety Reporting List:** Not on the Health & Safety Reporting List.

**Chemical Test Rules:** Not under a Chemical Test Rule.

**TSCA 12(b)** Chemical Weapons Convention: TSCA 12(b): No

**CDTA:** No

**SARA 311/312:** Acute: Yes Chronic: Yes Fire: No Pressure: No  
Reactivity: No (Mixture / Solid)

**TSCA Significant New Use Rule:** Not a SNUR under TSCA.

**SARA Section 302 (RQ):** None of the chemicals in this material have an RQ.

**Section 302 (TPQ):** None of the chemicals in this product have a TPQ.

**SARA Codes:** CAS # 10043-35-3: chronic.  
**Section 313** No chemicals are reportable under Section 313.  
**Clean Air Act:** This material does not contain any hazardous air





pollutants. This material does not contain any Class 1 Ozone depletery substance. This material does not contain any Class 2 Ozone depletery substance.

**Clean Water Act:**

Boric Acid is not regulated by any water quality criteria under Section 304, is not listed as priority pollutant under Section 307, and is not listed as a hazardous substance under Section 311.

**SAFE DRINKING WATER ACT:**

Not regulated under SDWA, 42 USC 300g-1, 40 CFR 141 et seq. Consult state and local regulations for possible water quality advisories involving boron.

**OCCUPATIONAL EXPOSURE LIMITS:** Boric Acid is listed/regulated by OSHA, CAL OSHA, or ACGIH as "Particulate Not Otherwise Classified" or "Nuisance Dust".

**OSHA:**

Permissible Exposure Limit: 15mg/m<sup>3</sup>, total dust  
5 mg/m<sup>3</sup>, respirable dust

**ACGIH:**

Threshold Limit Value: 2 mg/m<sup>3</sup>.

**CALIFORNIA OSHA:**

Permissible Exposure Limit: 5 mg/m<sup>3</sup>

**STATE:**

CAS# 10043-35-3 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.  
California No Significant Risk Level: None of the chemicals in this product are listed.

**Other Regulations:**

**Canada:**

CAS#10043-35-3 is listed on Canada's DSL List.  
This product has a WHMIS classification of D2A.  
CAS#10043-35-3 is listed on Canada's Ingredient Disclosure List.

**Exposure Limits**

CAS#10043-35-3 :

OEL-AUSTRALIA: TWA 5 mg/m<sup>3</sup>  
OEL-BELGIUM: TWA 5 mg/m<sup>3</sup>  
OEL-DENMARK: TWA 5 mg/m<sup>3</sup>  
OEL-FRANCE: TWA 5 mg/m<sup>3</sup>  
OEL-THE NETHERLANDS: TWA 5 mg/m<sup>3</sup>  
OEL-SWEDEN: TWA 2 mg/m<sup>3</sup>; STEL 5mg/m<sup>3</sup>; Skin  
OEL-SWITZERLAND: TWA 5 mg/m<sup>3</sup>  
OEL-UNITED KINGDOM: TWA 5 mg/m<sup>3</sup>  
OEL IN BULGARIA, COLOMBIA, KOREA,



NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH TLV

**INTERNATIONAL AGENCY for CANCER RESEARCH:** Not listed as a carcinogen.  
**NTP ANNUAL REPORT ON CARCINOGENS:** Not listed as a carcinogen.  
**OSHA CARCINOGEN:** Not listed as an OSHA carcinogen.

**CONEG MODEL LEGISLATION:** Meets all CONEG requirements relating to heavy metal limitations on components of packaging materials.

**CALIFORNIA PROPOSITION 65:** Not listed as carcinogen or reproductive toxin.

**FEDERAL DRUG AGENCY (FDA):** Pursuant to 21 CFR 175.105, 176.180, and 181.30, Boric Acid (non-pesticide) is approved by the FDA for use in adhesive components of packaging materials, as a component of paper coatings on such materials, or for use in the manufacture thereof, which materials are expected to come in contact with dry food products.

**WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEMS (WHMIS):**  
Boric Acid is regulated as a Controlled Product and is classified as D2A because of possible reproductive toxicity.

**FIFRA:** This product is a **PESTICIDE**

## Section 16 - Additional Information

### OTHER INFORMATION:

#### Label Hazard Warning:

- May be harmful if swallowed.
- May cause reproductive harm or birth defects based on animal data.
- Avoid contamination of food or feed.
- Not for food or drug use
- Practice good housekeeping.
- Refer to all sections of this MSDS.
- KEEP OUT OF THE REACH OF CHILDREN.

#### National Fire Protection Association (NFPA) Classification:

4 = Severe, 3 = Serious, 2 = Moderate, 1 = Slight, 0 = Minimal

Health 2  
Flammability 0  
Reactivity 0

#### Hazardous Materials Information Systems (HMIS):

4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Insignificant

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One Penn Center West, Suite 400, Pittsburgh, PA 15276 · Phone: 412-809-8215 · Fax: 412-809-8217  
Email: [etimineusa@etimineusa.com](mailto:etimineusa@etimineusa.com) · Website: [www.etimineusa.com](http://www.etimineusa.com)



Blue: (Acute Health) 2\*

Red: (Flammability) 0

Yellow: (Reactivity) 0

\* Chronic Effects (for explanation see Section 11)

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**MSDS Creation Date:** 10/21/2013

**Updated on:** 10/21/2013

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BHT

# Material Safety Data Sheet

## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

<b>Trade name</b>	BHT	
<b>Synonyms</b>	Butylated Hydroxytoluene; 2,6-di-tert-butyl-4-methyl phenol; 2,6-di-tert-butyl-p-cresol	
<b>Manufacturer/Supplier</b>	Merisol Antioxidants LLC	
<b>Address</b>	292 State Route 8 Oil City, PA, 16301	
<b>Telephone</b>	CHEMTREC North America Transportation Emergency (24-hr)	(800) 424-9300
	CHEMTREC World Wide	(703) 527-3887
	Other Emergencies (24-hr)	(814) 677 2028
	MSDS and Product Information (8:00am-4:30pm CST)	(814) 677 2028
	Health and Safety Information (8:00am-4:00pm CST)	(814) 677 2028

## SECTION 2 COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Components</u>	<u>CAS-No.</u>	<u>Weight %</u>
BHT	128-37-0	>=99

See Section 8 for Exposure Guidelines and Section 15 for Regulatory Classifications.

## SECTION 3 HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

**Appearance** White Solid at room temperature. Colorless liquid when melted.

**Odor** Mild.

**Precautions** **CAUTION!** MAY CAUSE EYE, SKIN AND RESPIRATORY IRRITATION. Contact with hot product will cause thermal burns. Provide adequate ventilation. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Material will burn in a fire. Dust may form explosive mixture in air. Take measures to prevent the build up of electrostatic charge.

**Environmental precautions** Do not flush into surface water or sanitary sewer system. Low aquatic toxicity. Product is slightly soluble in water. According to the results of tests of biodegradability this product is not readily biodegradable. BHT is considered to have a moderate to high bioaccumulation potential (230-2500 (fish, 56-day test)) in aquatic species.

### POTENTIAL HEALTH EFFECTS

**Eyes** Contact with eyes may cause irritation.

## BHT

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**Skin** Slightly irritating. May cause sensitization by skin contact.

**Inhalation** May cause irritation of respiratory tract.

**Ingestion** Harmful if swallowed.

**Additional advice** Product dust may be irritating to eyes, skin and respiratory system.

(See Section 11 for Toxicological Information)

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## SECTION 4 FIRST AID MEASURES

**Eye contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.

**Skin contact** Wash off with soap and plenty of water. If skin irritation persists, call a physician. Wash contaminated clothing before re-use.

**Inhalation** Remove to fresh air. In the case of inhalation of aerosol/mist consult a physician if necessary.

**Ingestion** If accidentally swallowed obtain immediate medical attention. If conscious, drink plenty of water. Do not induce vomiting.

**Additional advice** There is no specific antidote. Treatment consists of support of respiratory and cardiovascular functions.

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## SECTION 5 FIRE FIGHTING MEASURES

### FLAMMABLE PROPERTIES

**Flash point** 118 °C 244 °F closed cup

**Autoignition temperature** 470 °C 878 °F

**Flammable limits in air % by volume** **Lower explosion limit:** No data available.  
**Upper explosion limit:** No data available.

**Fire and explosion** Material will burn in a fire. Dust may form explosive mixture in air. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges.

**Extinguishing media** Water spray or fog, foam, dry chemical, CO<sub>2</sub>.

**Fire fighting instructions** Wear self-contained breathing apparatus and protective suit.

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## BHT

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**Further information** Evacuate personnel to safe areas. Stop source of fuel if possible. Do not allow run-off from fire fighting to enter drains or water courses.

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## SECTION 6 ACCIDENTAL RELEASE MEASURES

**Steps to be taken in case of spill or leak** Remove all sources of ignition. Use personal protective equipment. Prevent further leakage or spillage. Avoid dust formation. Sweep up and shovel into suitable containers for disposal. Do not flush with water. Non-disposable equipment should be thoroughly decontaminated with soap and water. Do not flush into surface water or sanitary sewer system.

**Spill precautions** Do not contaminate any lakes, streams, ponds, groundwater or soil.

**Reporting Requirements** Composition and extent of any spill should be evaluated against local regulations and reported to the proper agencies, if necessary.

---

## SECTION 7 HANDLING AND STORAGE

**Safe handling advice** Avoid accumulation of dust. Provide for appropriate exhaust ventilation and dust collection at machinery. Take measures to prevent the build up of electrostatic charge. During processing, dust may form explosive mixture in air. Avoid contact with skin and eyes. Do not breathe vapours/dust. Handle in accordance with good industrial hygiene and safety practice. Keep containers tightly closed in a dry, cool and well-ventilated place.

---

## SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

### ENGINEERING MEASURES

Provide adequate ventilation. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### PERSONAL PROTECTIVE EQUIPMENT

**Eyes** When contact with liquid is possible, use a face shield and/or chemical splash goggles. Otherwise use safety glasses with side shields or goggles.

**Skin** Solvent-resistant gloves. Long sleeved clothing. Non-disposable equipment should be thoroughly decontaminated with soap and water.

**Inhalation** Use an approved organic vapor/particulate air-purifying respirator to control dust or fumes exposure.

## BHT

### EXPOSURE GUIDELINES

<u>Components</u>	<u>Exposure limit(s)</u>
<b>BHT</b>	OSHA PEL (5 mg/m <sup>3</sup> ) OSHA regulates as Nuisance Dust (Nuisance Particulates). ACGIH TLV (8-hour) (2 mg/m <sup>3</sup> ) (inhalable aerosol and/or vapor) NIOSH TWA (10-hour) (10 mg/m <sup>3</sup> )

PEL= Permissible Exposure Limits  
TLV= Threshold Limit Value  
EL= Excursion Limit

TWA= Time Weighted Average (8 hr.)  
STEL= Short Term Exposure Limit (15 min.)  
WEEL= Workplace Environmental Exposure Level

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** Solid at room temperature. Colorless liquid when melted.

**Colour** White

**Odour** Mild.

**Form** crystals, pellets, molten

**Boiling point/range** 265 °C 509 °F

**Vapour pressure** < 0.01 mm Hg @ 20 °C

**Vapor density** 7.6

**Solubility (water)** slightly soluble 0.4 - 1.14 mg/l

**Viscosity** 3.45 cSt @ 80 °C  
1.54 cSt @ 120 °C

**Melting point/range** 69 - 70 °C 156 - 158 °F

**Density** 1.01 g/cm<sup>3</sup> @ 25 °C

**LogKow** 5.1

## SECTION 10 STABILITY AND REACTIVITY

**Conditions to avoid** Stable under normal conditions. Keep away from heat and sources of ignition.

**Hazardous decomposition products** Combustion products include carbon dioxide, carbon monoxide and possibly other unidentified organic compounds.

**Incompatibility with other materials** Incompatible with strong acids and oxidizing agents.



## BHT

**Hazardous polymerization** Hazardous polymerisation does not occur.

---

## SECTION 11 TOXICOLOGICAL INFORMATION

### Additional Remarks

**BHT** Low acute toxicity. May cause sensitization by skin contact.

### Eyes

**BHT** Slightly irritating.

### Skin

**BHT** Irritating. May cause sensitization by skin contact.  
Acute dermal LD50 (rat): > 2,000 mg/kg

### Ingestion

**BHT** Acute oral LD50 (rat): > 2,930 mg/kg  
Repeated oral exposure of laboratory animals (rats and mice) at doses greater than 25 mg/kg/day resulted in growth depression, and functional and histological changes to the lung, liver, kidneys, and thyroid.

### Reproductive Effects

The only effects on reproduction in rats and mice were lower numbers of litters of ten or more pups at birth at doses of 100 mg/kg/day and above. During pregnancy, BHT had maternal effects on mice above oral doses of 240 mg/kg/day.

### Carcinogenicity

**BHT** This product contains no carcinogenic substances.

---

## SECTION 12 ECOLOGICAL INFORMATION

**Aquatic toxicity** Low aquatic toxicity.

**BHT** LC0 (Brachydanio rerio): 96 hours  $\geq$  0.57 mg/l

EC0 (Daphnia magna): 48 hours  $\geq$  0.17 mg/l

NOEC (S. subspicatus (algae)): 72 hours 0.4 mg/l

NOEC (Daphnia magna): 21 d 0.07 mg/l  
(reproductive effects)

## BHT

---

**Biodegradation** Product is slightly soluble in water. According to the results of tests of biodegradability this product is not readily biodegradable. BHT is considered to have a moderate to high bioaccumulation potential (230-2500 (fish, 56-day test)) in aquatic species.

### Bioconcentration Factor (BCF)

**BHT** 230 - 2,500 ((fish) 56 d)  
Accumulation in aquatic organisms is expected.

---

## SECTION 13 DISPOSAL CONSIDERATIONS

**Disposal methods** Dispose of only in accordance with local, state, and federal regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

**Empty containers** Empty containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, triple-rinsed, properly bunged and promptly returned to a drum reconditioner, or properly disposed., Dispose of rinse water in accordance with local and national regulations.

---

## SECTION 14 TRANSPORT INFORMATION

**DOT description** Not regulated in solid form; however, if shipped in molten form above 100 C, use the following description: UN3257, Elevated temperature liquid, n.o.s., 9, PG III

**IATA description** not regulated

**IMDG Description** not regulated

---

## SECTION 15 REGULATORY INFORMATION

### U.S. FEDERAL REGULATIONS

**OSHA classification**  
Irritant, Sensitizer

**TSCA Inventory Listing**  
Components

CAS-No.

2,6-Bis(1,1-dimethylethyl)-4-methylphenol

128-37-0

---

## BHT

---

### **SARA 302 Status** **Components**

**CAS-No.**

**Weight %**

Contains no chemicals subject to SARA 302 reporting.

### **SARA 311/312 Classification** "Immediate (acute) health hazard"

### **SARA 313 Chemical** **Components**

**CAS-No.**

**Weight %**

Contains no chemicals subject to SARA 313 reporting.

### **CERCLA Hazardous Substance** **Components**

**CERCLA RQ**

**Weight %**

Contains no chemicals subject to CERCLA.

## **INTERNATIONAL REGULATIONS**

### **Workplace Hazardous Materials Information System (WHMIS) Classification** Toxic Material Causing Other Toxic Effects

### **Australian Inventory of Chemical Substances (AICS) Listing** Listed on the AICS.

### **Japanese Minister of International Trade and Industry (MITI) Inventory Listing** Listed on MITI.

### **Canadian Domestic Substance List (DSL) Inventory Listing** Listed on the DSL.

### **European Inventory of Existing Commercial Chemical Substances (EINECS) Listing** Listed on EINECS.

### **Phillipines Inventory List (PICCS)** Listed on PICCS.

### **Korean Inventory List** Listed on the ECL.

### **China Inventory List** Listed on the China inventory.

BHT

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## **STATE REGULATIONS**

### **California Safe Drinking Water Act (Prop 65) Listing Components**

**CAS-No.**

Contains no chemical subject to California Prop 65.

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## **SECTION 16 OTHER INFORMATION**

### **HAZARD RATINGS**

	<u>Health</u>	<u>Flammability</u>	<u>Reactivity</u>
<b>HMIS</b>	1	1	0
<b>NFPA</b>	1	1	0

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# MATERIAL SAFETY DATA SHEET

Ashland

Page 001  
Date Prepared: 06/03/02  
Date Printed: 03/05/03  
MSDS No: 999.0000005-010.003  
ASH

## MALEIC ANHYDRIDE BRIQUETTE

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### Material Identity

Product Name: MALEIC ANHYDRIDE BRIQUETTE ASH  
SAP Material No: 3522506 120 04S  
General or Generic ID: ANHYDRIDES

#### Company

Ashland  
Ashland Distribution Co. &  
Ashland Specialty Chemical Co.  
P. O. Box 2219  
Columbus, OH 43216  
614-790-3333

#### Emergency Telephone Number:

1-800-ASHLAND (1-800-274-5263)  
24 hours everyday

Regulatory Information Number:  
1-800-325-3751

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
MALEIC ANHYDRIDE	108-31-6	98.0-100.0

### 3. HAZARDS IDENTIFICATION

#### Potential Health Effects

##### Eye

Can cause permanent eye injury. Symptoms include stinging, tearing, redness, and swelling of eyes. Can injure the cornea and cause blindness. Additional symptoms of eye exposure may include: halo vision (blurred vision around bright objects), painful sensitivity to light, double vision.

##### Skin

Contact with dry skin may cause a delayed burning feeling. Contact with wet skin, like from sweating, causes an immediate burning feeling. Prolonged skin contact may result in skin damage, including burns. Additional symptoms of skin contact may include: allergic skin reaction (delayed skin rash which may be followed by blistering, scaling and other skin effects), Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.

##### Swallowing

Swallowing this material may be harmful or fatal. Symptoms may include severe stomach and intestinal irritation (nausea, vomiting, diarrhea), abdominal pain, and vomiting of blood. Swallowing this material may cause burns and destroy tissue in the mouth, throat, and digestive tract. Low blood pressure and shock may occur as a result of severe tissue injury.

##### Inhalation

Breathing of dust, vapor, and/or fume is possible. Breathing this material may be harmful or fatal. Symptoms may include severe irritation and burns to the nose, throat, and respiratory tract. Symptoms usually occur at air concentrations higher than the recommended exposure limits (See Section 8).

Continued on next page

## MATERIAL SAFETY DATA SHEET

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### MALEIC ANHYDRIDE BRIQUETTE

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#### Symptoms of Exposure

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: stomach or intestinal upset (nausea, vomiting, diarrhea), nosebleed, cough, sneezing, headache, loss of appetite, muscle weakness, allergic reaction (causes narrowing of the air passages of the lungs, sweating, flushing, hives, rapid heart rate, and lowered blood pressure), lung edema (fluid buildup in the lung tissue).

#### Target Organ Effects

Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: mild, reversible liver effects respiratory tract damage (nose, throat, and airways), kidney damage, lung damage. Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: cardiac sensitization, chronic bronchitis, asthma, respiratory tract damage (nose, throat, and airways).

#### Developmental Information

Based on the available information, risk to the fetus from maternal exposure to this material cannot be assessed.

#### Cancer Information

Based on the available information, this material cannot be classified with regard to carcinogenicity. This material is not listed as a carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or the Occupational Safety and Health Administration.

#### Other Health Effects

Maleic anhydride is a crystalline material which readily powders and sublimates (changes directly from solid to vapor or fume). In the form of dust, vapor, or fume, it is extremely irritating to the eyes and respiratory tract, causing a burning sensation.

#### Primary Route(s) of Entry

Inhalation, Skin absorption, Skin contact, Eye contact.

---

### 4. FIRST AID MEASURES

#### Eyes

If material gets into the eyes, immediately flush eyes gently with water for at least 15 minutes while holding eyelids apart. If symptoms develop as a result of vapor exposure, immediately move individual away from exposure and into fresh air before flushing as recommended above. Seek immediate medical attention.

#### Skin

Immediately flush skin with water for at least 15 minutes while removing contaminated clothing and shoes. Seek immediate medical attention. Wash clothing before reuse and discard contaminated shoes.

#### Swallowing

Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

Continued on next page.

# MATERIAL SAFETY DATA SHEET

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## MALEIC ANHYDRIDE BRIQUETTE

ASH

### Inhalation

If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

### Note to Physicians

Inhalation of high concentrations of this material, as could occur in enclosed spaces or during deliberate abuse, may be associated with cardiac arrhythmias. Sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to this material. Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: respiratory tract, skin, lung (for example, asthma-like conditions), kidney. Individuals with preexisting heart disorders may be more susceptible to arrhythmias (irregular heartbeats) if exposed to high concentrations of this material.

## 5. FIRE FIGHTING MEASURES

### Flash Point

215.0 F (101.6 C) PMCC

### Explosive Limit

(for product) Lower 1.4 Upper 7.1 %

### Autoignition Temperature

No data

### Hazardous Products of Combustion

May form: carbon dioxide and carbon monoxide.

### Fire and Explosion Hazards

Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

### Extinguishing Media

regular foam, water fog, carbon dioxide.

### Fire Fighting Instructions

Water or foam may cause frothing which can be violent and possibly endanger the life of the firefighter. Wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.

### NFPA Rating

Health - 3, Flammability - 1, Reactivity - 1

## 6. ACCIDENTAL RELEASE MEASURES

### Small Spill

Eliminate all sources of ignition such as flares, flames (including pilot lights), and electrical sparks. Sweep up material for disposal or recovery. Persons not wearing proper personal protective equipment should be excluded from area of spill.

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# MATERIAL SAFETY DATA SHEET

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## MALEIC ANHYDRIDE BRIQUETTE

### Large Spill

Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Scoop into containers.

## 7. HANDLING AND STORAGE

### Handling

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. All five-gallon pails and larger metal containers, including tank cars and tank trucks, should be grounded and/or bonded when material is transferred. Emergency eyewash fountains and safety showers should be available in the immediate vicinity of potential exposure.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Eye Protection

Chemical splash goggles and face shield (8" min.) in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. (Consult your industrial hygienist.)

### Skin Protection

Wear impervious gloves (consult your safety equipment supplier). To prevent repeated or prolonged skin contact, wear impervious clothing and boots.

### Respiratory Protections

If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

### Engineering Controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

### Exposure Guidelines

Component

MALEIC ANHYDRIDE (108-31-6)

OSHA PEL 0.250 ppm - TWA

OSHA VPEL 0.250 ppm - TWA

ACGIH TLV 0.100 ppm - TWA

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Boiling Point

(for product) 395.0 F (201.6 C) @ 760 mmHg

Continued on next page



MATERIAL SAFETY DATA SHEET

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MALEIC ANHYDRIDE BRIQUETTE

ASH

**Vapor Pressure**

(for product) .160 mmHg @ 68.00 F

**Specific Vapor Density**

3.380 @ AIR=1

**Specific Gravity**

1.480 @ 68.00 F

**Liquid Density**

Not applicable

**Percent Volatiles**

No data

**Evaporation Rate**

Not applicable

**Appearance**

No data

**State**

SOLID

**Physical Form**

BRIQUETTES

**Color**

WHITE

**Odor**

No data

**pH**

Not applicable

**10. STABILITY AND REACTIVITY**

**Hazardous Polymerization**

Product will not undergo hazardous polymerization.

**Hazardous Decomposition**

May form: carbon dioxide and carbon monoxide.

**Chemical Stability**

Stable.

**Incompatibility**

Avoid contact with: amines, strong alkalies, strong oxidizing agents.

Continued on next page

# MATERIAL SAFETY DATA SHEET

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ASH

## MALEIC ANHYDRIDE BRIQUETTE

### 11. TOXICOLOGICAL INFORMATION

No data

### 12. ECOLOGICAL INFORMATION

#### Chemical Fate Information

Maleic anhydride is readily biodegradable when tested by OECD method 301B.

### 13. DISPOSAL CONSIDERATION

#### Waste Management Information

Dispose of in accordance with all applicable local, state and federal regulations. Do not discharge effluent containing this product into lakes, streams, ponds or estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit, and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA. For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Ashland Distribution Company, IC&S Environmental Services Group at 800-637-7922.

### 14. TRANSPORT INFORMATION

#### DOT Information - 49 CFR 172.101

##### DOT Description:

MALEIC ANHYDRIDE,8,UN2215,III

##### Container/Mode:

55 GAL DRUM/TRUCK PACKAGE

##### NOS Component:

None

#### RQ (Reportable Quantity) - 49 CFR 172.101

Product Quantity (lbs) Component

5000

MALEIC ANHYDRIDE

#### Other Transportation Information

The DOT Transport Information may vary with the container and mode of shipment.

### 15. REGULATORY INFORMATION

#### US Federal Regulations

##### TSCA (Toxic Substances Control Act) Status

TSCA (UNITED STATES) The intentional ingredients of this product are listed.

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# MATERIAL SAFETY DATA SHEET

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## MALEIC ANHYDRIDE BRIQUETTE

### CERCLA RQ - 40 CFR 302.4(a)

Component	RQ (lbs)
MALEIC ANHYDRIDE	5000

### SARA 302 Components - 40 CFR 355 Appendix A

None

### Section 311/312 Hazard Class - 40 CFR 370.2

Immediate(X) Delayed(X) Fire( ) Reactive( ) Sudden Release of Pressure( )

### SARA 313 Components - 40 CFR 372.65

Section 313 Component(s)	CAS Number	%
MALEIC ANHYDRIDE	108-31-6	100.00

### OSHA Process Safety Management 29 CFR 1910

None listed

### EPA Accidental Release Prevention 40 CFR 68

None listed

### International Regulations

#### Inventory Status

ACQIN (AUSTRALIA) The intentional ingredients of this product are listed.  
DSL (CANADA) The intentional ingredients of this product are listed.  
ECL (SOUTH KOREA) The intentional ingredients of this product are listed.  
EINECS (EUROPE) The intentional ingredients of this product are listed.  
ENCS (JAPAN) The intentional ingredients of this product are listed.

### State and Local Regulations

#### California Proposition 65

None

### New Jersey RTK Label Information

MALEIC ANHYDRIDE	108-31-6
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### Pennsylvania RTK Label Information

2,5-FURANDIONE	108-31-6
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## 16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.



## Univar USA Inc Material Safety Data Sheet

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MSDS No:

Version No:

Order No:

Univar USA Inc., 17425 NE Union Hill Rd., Redmond WA 98052  
(425) 889 3400

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### Emergency Assistance

For emergency assistance involving chemicals call  
Chemtrec - (800) 424-9300

## **Material Name: Oxalic Acid Dihydrate**

\* \* \* Section 1 - Chemical Product and Company Identification \* \* \*

**Chemical Name:** Oxalic Acid Dihydrate

**Product Use:** For Commercial Use

Synonyms: Acide Oxalique, Ethanedioic acid, Ethanedionic Acid, Dicarboxylic acid

Distributed By:

UNIVAR USA INC.  
17425 NE Union Hill Rd.  
Redmond, WA 98052  
425-889-3400

**General Comments: FOR COMMERCIAL USE ONLY; NOT TO BE USED AS A PESTICIDE.**

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

\* \* \* Section 2 - Composition / Information on Ingredients \* \* \*

CAS #	Component	Percent
6153-56-6	Oxalic Acid Dihydrate	99-100
144-62-7	Oxalic Acid	0-1

### **Component Related Regulatory Information**

This product may be regulated, have exposure limits or other information identified as the following: Oxalic Acid (144-62-7) or Ethanedioic acid.

### **Component Information/Information on Non-Hazardous Components**

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

\* \* \* Section 3 - Hazards Identification \* \* \*

### **Emergency Overview**

Oxalic Acid Dihydrate is a colorless, odorless, crystalline solid. Potentially fatal if swallowed or inhaled. Can cause discoloration, irritation and burns of the skin. Can cause permanent damage to the eyes. Can cause severe irritation of the respiratory system. Emergency responders must wear proper personal protective equipment for the incident to which they are responding. Large amounts or airborne dusts of Oxalic Acid can present an air/dust explosion hazard.

### **Hazard Statements**

DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. Can cause burns of eyes and skin. May cause respiratory tract irritation. Avoid contact with eyes and skin. Avoid breathing dusts. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Keep from contact with clothing and other combustible materials.

### **Potential Health Effects: Eyes**

Contact with the eyes will cause severe irritation, pain, reddening and possibly, damage to the cornea. Depending on the duration of eye contact, damage to the cornea may be irreversible.

### **Potential Health Effects: Skin**

Product can act as a corrosive agent to the skin, especially if contact is prolonged. Repeated or prolonged skin exposure can cause dermatitis and slow healing ulcers. Excessive contact may produce a delayed localized pain and discoloration of the skin with the fingernails becoming brittle and blue with possible gangrenous ulcerations of the skin. Oxalic Acid may be absorbed via intact skin. Chronic skin absorption of Oxalic Acid can lead to formation of kidney and urinary tract stones.

### **Potential Health Effects: Ingestion**

May irritate and cause burns of the mouth and throat. Symptoms may include burning pain of the mouth, throat and stomach followed by profuse vomiting. Small doses may cause headache, pain and twitching in muscles and cramps, while larger doses can cause weak and irregular heartbeat, drop in blood pressure and signs of heart failure. The fatal adult human oral dose is estimated at 5 grams (0.18 oz). Death occurs rapidly. A delayed effect of ingestion is kidney damage, possibly leading to renal failure. Chronic ingestion exposure to solutions of Oxalic Acid is linked to stone formation in the kidneys and urinary tract, resulting in difficult and painful urination and painful abdominal spasms during passing of stones.

### **Potential Health Effects: Inhalation**

May irritate the nose, throat and respiratory tract with symptoms such as sore throat, coughing and difficulty breathing. May cause inflammation of the respiratory tract. Chronic inhalation of Oxalic Acid can result in formation of kidney and urinary tract stones.

**HMIS Ratings: Health Hazard: 3\* Fire Hazard: 1 Physical Hazard: 0**

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic hazard

## Material Safety Data Sheet

### Material Name: Oxalic Acid Dihydrate

#### \* \* \* Section 4 - First Aid Measures \* \* \*

##### First Aid: Eyes

In case of contact with eyes, rinse immediately with plenty of water for at least 15 minutes. Seek immediate medical attention if any adverse effect occurs.

##### First Aid: Skin

Remove all contaminated clothing. For skin contact, wash extremely thoroughly with soap and water. Seek immediate medical attention if irritation develops or persists.

##### First Aid: Ingestion

DO NOT INDUCE VOMITING. Have victim rinse mouth thoroughly with water, if conscious. Never give anything by mouth to a victim who is unconscious or having convulsions. Contact a physician or poison control center immediately. **First Aid:**

##### Inhalation

Remove source of contamination or move victim to fresh air. Apply artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult. Get immediate medical attention.

##### First Aid: Notes to Physician

Provide general supportive measures and treat symptomatically. Treatment should be rapidly instituted by giving a dilute solution of calcium lactate, lime water, finely pulverized chalk, plaster, and/or milk to supply large amounts of calcium to inactivate oxalate by forming an insoluble calcium salt in the stomach. Gastric lavage is controversial, since this may compound an already severe corrosive lesion in the esophagus or stomach. However, if used, gastric lavage should be done with limewater (calcium hydroxide). Intravenous gluconate or calcium chloride solutions should be given to prevent hypocalcemic tetany; in severe cases parathyroid extract also has been given. Additionally, acute renal failure should be anticipated, and careful fluid management is necessary. Metabolically its toxicity is believed to be due to the capacity of Oxalic Acid to immobilize calcium and thus upset the calcium-potassium ratio in critical tissues. Effective therapy against burns from oxalic acid involves replacement of calcium.

#### \* \* \* Section 5 - Fire Fighting Measures \* \* \*

**Flash Point:** Not available

Method Used: Not applicable

**Upper Flammable Limit (UEL):** Not applicable

Lower **Flammable Limit (LEL):** Not applicable

**Auto Ignition:** Not applicable

**Flammability Classification:** Not applicable

**Rate of Burning:** Not applicable

##### General Fire Hazards

Oxalic Acid Dihydrate is a combustible solid, but must be substantially preheated before it ignites. This product is corrosive and presents a severe inhalation and contact hazard to firefighters. When involved in a fire, this material may decompose and produce irritating and toxic gases (e.g., carbon monoxide, carbon dioxide and formic acid). Finely divided dusts of this material may cause a hazard of an air/dust explosion.

##### Hazardous Combustion Products

Formic acid, carbon dioxide, carbon monoxide.

##### Extinguishing Media

Use water spray, dry chemical, "alcohol resistant" foam, or carbon dioxide. Reduce dusts with water spray.

##### Fire Fighting Equipment/Instructions

Firefighters should wear full protective clothing including self-contained breathing apparatus. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. If possible, prevent runoff water from entering storm drains, bodies of water or other environmentally sensitive areas.

**NFPA Ratings: Health: 3 Fire: 1 Reactivity: 0 Other:**

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

#### \* \* \* Section 6 - Accidental Release Measures \* \* \*

##### Containment Procedures

Stop the flow of material, if this can be done without risk. Contain the discharged material. If sweeping of a contaminated area is necessary use a dust suppressant agent, which does not react with product (see Section 10 for incompatibility information).

## Material Safety Data Sheet

### Material Name: Oxalic Acid Dihydrate

#### \*\*\* Section 6 - Accidental Release Measures (Continued) \*\*\*

##### Clean-Up Procedures

Wear appropriate protective equipment and clothing during clean-up. Sweep or vacuum spilled solid, minimizing generation of particulates. (Use an explosion-proof vacuum). Place the material in a suitable container and dispose of in accordance with applicable U.S. Federal, State, or local procedures. Thoroughly wash the area after a spill or leak clean-up. Prevent spill rinsate from contamination of storm drains, sewers, soil or groundwater.

##### Evacuation Procedures

Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. Keep materials which can burn away from spilled material. In case of large spills, follow all facility emergency response procedures.

##### Special Procedures

Remove soiled clothing and launder before reuse. Avoid all skin contact with the spilled material. Have emergency equipment readily available.

#### \*\*\* Section 7 - Handling and Storage \*\*\*

##### Handling Procedures

All employees who handle this material should be trained to handle it safely. Do not breathe dust. Avoid all contact with skin and eyes. Use this product only with adequate ventilation. Wash thoroughly after handling.

##### Storage Procedures

Keep container tightly closed when not in use. If this product is transferred into another container, only use portable containers and tools approved for corrosive solids. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Use corrosion-resistant structural materials, lighting, and ventilation systems in the storage area.

Empty containers may contain residual particulates; therefore, empty containers should be handled with care. Never store food, feed, or drinking water in containers which held this product. Keep this material away from food, drink and animal feed. Do not store this material in open or unlabeled containers. Limit quantity of material stored.

#### \*\*\* Section 8 - Exposure Controls / Personal Protection \*\*\*

##### Exposure Guidelines

###### A: General Product Information

Follow the applicable exposure limits.

###### B: Component Exposure Limits

The exposure limits given are for Oxalic Acid (CAS # 144-62-7)

ACGIH: 1 mg/m<sup>3</sup> TWA  
2 mg/m<sup>3</sup> STEL

OSHA: 1 mg/m<sup>3</sup> TWA

NIOSH: 1 mg/m<sup>3</sup> TWA  
2 mg/m<sup>3</sup> STEL

##### Engineering Controls

Use mechanical ventilation such as dilution and local exhaust. Use a corrosion-resistant ventilation system and exhaust directly to the outside. Supply ample air replacement. Provide dust collectors with explosion vents.

##### PERSONAL PROTECTIVE EQUIPMENT

*The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent Standards of Canada. Please reference applicable regulations and standards for relevant details.*

###### Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields (or goggles) and a face shield, if this material is made into solution. If necessary, refer to U.S. OSHA 29 CFR 1910.133.

###### Personal Protective Equipment: Skin

Wear impervious gloves, boots and coveralls to avoid skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

## Material Safety Data Sheet

### Material Name: Oxalic Acid Dihydrate

#### \*\*\* Section 8 - Exposure Controls / Personal Protection (Continued) \*\*\*

##### Personal Protective Equipment: Respiratory

If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a fullfacepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. The following NIOSH Guidelines for Oxalic Acid (CAS # 144-62-7) are presented for further information.

Up to 25 mg/m<sup>3</sup>: SAR operated in a continuous in a continuous-flow mode

Up to 50 mg/m<sup>3</sup>: Full-facepiece respirator with high-efficiency particulate filter(s), or full-facepiece SCBA or full-facepiece SAR.

Up to 500 mg/m<sup>3</sup>: Positive pressure SAR with full facepiece.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Positive pressure, full-facepiece SCBA, or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

Escape: Full-facepiece respirator with high-efficiency particulate filter(s), or escape-type SCBA.

NOTE: The IDLH concentration for Oxalic Acid is 500 mg/m<sup>3</sup>. This substance causes eye irritation or damage, eye protection is needed.

##### Personal Protective Equipment: General

Have an eyewash fountain and safety shower available in the work area

#### \*\*\* Section 9 - Physical & Chemical Properties \*\*\*

##### Physical Properties: Additional Information

The data provided in this section are to be used for product safety handling purposes. Please refer to Product Data Sheets, Certificates of Conformity or Certificates of Analysis for chemical and physical data for determinations of quality and for formulation purposes.

**Appearance:** Colorless, transparent

**Odor:** Odorless

**Physical State:** Solid

**pH:** 1.3 (0.1M solution)

**Vapor Pressure:** < 0.001 mm Hg @ 20 deg C

**Vapor Density:** 4.3

**Boiling Point:** 149-160 deg C (300-320 deg F)

**Freezing/Melting Point:** 101.5 deg C (215 deg F)

**Solubility (H2O):** Freely soluble in water

**Specific Gravity:** 1.65 (H2O = 1)

**Softening Point:** Not available

**Particle Size:** Not available

**Molecular Weight:** 126.7

**Bulk Density:** Not available **Chemical**

**Formula:** (COOH)<sub>2</sub>\*2H<sub>2</sub>O

#### \*\*\* Section 10 - Chemical Stability & Reactivity Information \*\*\*

##### Chemical Stability

Normally stable. If heated to melting point, sublimation and decomposition occurs.

##### Chemical Stability: Conditions to Avoid

Avoid high temperatures and ignition sources.

##### Incompatibility

This product is incompatible with strong alkalines, strong oxidizers, chlorites and hypochlorites and combustible materials. In contact with iron and iron compounds, Oxalic Acid, Dihydrate may react rapidly to form ferric oxalate. Contact with silver may form explosive silver oxalate. Oxalic Acid Dihydrate in solution is corrosive to metals.

##### Hazardous Decomposition

Upon heating, water, carbon monoxide, carbon dioxide and formic acid are released.

##### Hazardous Polymerization

Will not occur.



## Material Safety Data Sheet

### Material Name: Oxalic Acid Dihydrate

#### \*\*\* Section 11 - Toxicological Information \*\*\*

##### Acute and Chronic Toxicity

###### A: General Product Information

Acute toxicity is primarily due to its caustic (alkaline properties). Oxalic Acid Dihydrate is a corrosive solid and contact can cause eye and skin irritation and burns. Product is a respiratory tract irritant, and inhalation may cause nose irritation, sore throat, coughing, and chest tightness and possibly, burns to the respiratory system. Inhaling large amounts of vapor from solution or swallowing dust or particulates can cause stomach pain, vomiting, coma and death.

Chronic: Repeated or prolonged skin exposure can cause dermatitis and slow healing ulcers. Severe cases may show symptoms such as albuminuria, chronic cough, vomiting, pain in back, and gradual emaciation and weakness. The skin may be bluish in color and the nails brittle and yellow. Long term ingestion, skin absorption or inhalation overexposure can cause stone formation in the kidney and urinary tract.

This compound was tested, per the July 1992 OECD Guideline for testing of Chemicals, Number 404, "Acute Dermal Irritation/Corrosion". In these tests on intact skin of adult rabbits, erythema and edema were absent, with a test duration time of 3 minutes and 1 hour. With a 4 hour exposure, erythema was absent to very slight at one hour post patch removal and cleared by 24 hours. Edema was absent at all observation intervals. During the course of the study, no abnormal systemic effects were observed and the body weight changes of the test animals were normal.

###### B: Component Analysis - LD50/LC50

###### Oxalic Acid Dihydrate:

Skin-Rabbit, adult 500 mg/24 hours Mild irritation effects; Eye effects-Rabbit, adult 250 mg/24 hours Severe irritation effects; Eye effects-Rabbit, adult 100 mg/4 seconds: ms Severe irritation effects ; Intraperitoneal-Mouse LD<sub>50</sub>: 270 mg/kg; Oral-Rat LD50: 7500 mg/kg; Unreported-rat LD<sub>50</sub>: 1400 mg/kg

###### C: Component Analysis - TDLo/LDLo

###### Oxalic Acid Dihydrate:

Oral-woman LDLo: 600 mg/kg: Gastrointestinal: changes in structure or function of esophagus, hypermotility, diarrhea, other changes; Oral-rat TDLo: 175 gm/kg/70 days-continuous: Endocrine: changes in thyroid weight; Musculoskeletal: other changes; Oral-dog LDLo: 1 gm/kg; Subcutaneous-Frog, adult LDLo 757 mg/kg

##### Carcinogenicity

###### A: General Product Information

No information available.

###### B: Component Carcinogenicity

Oxalic Acid Dihydrate is not listed by any agency as to carcinogenicity.

##### Epidemiology

No information available.

##### Neurotoxicity

Prolonged or repeated exposure may result in deposits of calcium oxalate in the kidney tubules and the brain, with effects on the cardiac and nervous tissues.

##### Mutagenicity

No information available.

##### Teratogenicity

No information available.

##### Other Toxicological Information

None.

#### \*\*\* Section 12 - Ecological Information \*\*\*

##### Ecotoxicity

###### A: General Product Information

Persistence: If released to soil, Oxalic Acid Dihydrate will be mobile in soil and is likely to leach to groundwater. Biodegrades at moderate rate. Rapid volatilization from soil is not expected. If released to an aquatic environment, Oxalic Acid Dihydrate is essentially nonvolatile from water. Oxalic Acid Dihydrate may react slowly in water with photochemically produced OH radicals, but it expected to be removed rapidly from surface water by direct photolysis. The daytime persistence of Oxalic Acid Dihydrate is not expected to be more than several hours. If released to the atmosphere, Oxalic Acid Dihydrate is expected to exist solely in the vapor phase. In the vapor phase, Oxalic Acid Dihydrate is very slowly degraded by reaction with photochemically formed hydroxyl radicals. The half-life for this reaction in air is estimated to be about 223 days. As in an aquatic environment, the persistence of Oxalic Acid Dihydrate during daylight is not expected to be more than a few hours. Based on its high water solubility, removal from air via wet deposition is likely to occur. Oxalic Acid Dihydrate may also be removed from dry air via dry deposition. Oxalic Acid Dihydrate is not expected to bioconcentrate significantly in aquatic organisms.

## Material Safety Data Sheet

### Material Name: Oxalic Acid Dihydrate

\*\*\* Section 12 - Ecological Information (Continued) \*\*\*

#### B: Ecotoxicity

##### Oxalic Acid (144-62-7)

EC<sub>50</sub> (*Pseudomonas putida*) 16 hours = 1,550 mg/L; EC<sub>50</sub> (*Microcystis aeruginosa* algae) 8 hours = 80 mg/L; ECo (*Scenedesmus quadricauda* green algae) 7 days = 790 mg/L; EC<sub>50</sub> (*Entosiphon sulcatum* protozoa) 72 hours = 222 mg/L; perturbation level (*Gammarus pulex*) = 25 mg/L; perturbation level (*Vorticella campanula*) = 50 mg/L; perturbation level (*Paramecium caudatum*) = 50 mg/L; perturbation level (*Tubifex tubifex*) = 80 mg/L; perturbation level (*Limnaea ovata*) = 60 mg/L; perturbation level (*Sialis flavilatera*) = 1,000 mg/L; period of survival (goldfish) 0.40-0.5 hour = 1,000 ppm, pH: 2.6; period of survival (goldfish) 4 days = 200 ppm, pH: 5.3

#### Environmental Fate

No potential for food chain concentration.

\*\*\* Section 13 - Disposal Considerations \*\*\*

#### US EPA Waste Number & Descriptions

**A: General Product Information** As shipped, this product is not considered a hazardous waste. Solutions of Oxalic Acid Dihydrate may require an EPA waste code D002 for corrosivity.

**B: Component Waste Numbers** No EPA Waste Numbers are applicable for this product's components.

#### Disposal Instructions

All wastes must be handled in accordance with local, state and federal regulations or with regulations of Canada and its Provinces. This material can be converted to a less hazardous material by weak reducing agents followed by neutralization.

\*\*\* Section 14 - Transportation Information \*\*\*

NOTE: The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under I.M.O., I.C.A.O. (I.A.T.A.) and 49 CFR to assure regulatory compliance.

#### US DOT Information

**Shipping Name:** Not Applicable

**Hazard Class:** Not Applicable

**UN/NA #:** Not Applicable

**Packing Group:** Not Applicable

**Required Label(s):** Not Applicable

**RQ Quantity:** Not Applicable

#### International Air Transport Association (IATA):

We classify this product as hazardous (Class 9) when shipped by air because 49 CFR 173.140 (a). "For the purposes of this subchapter, miscellaneous hazardous material (Class 9) means a material which presents a hazard during transportation, but which does not meet the definition of any other hazard class. This class includes: (a) Any material which has an anesthetic, noxious, or other similar property which could cause extreme annoyance or discomfort to a flight crew member so as to prevent the correct performance of assigned duties."

UN/NA #: UN 3077

**Proper Shipping Name:** Environmentally hazardous substance, solid, n.o.s. (oxalic acid)

**Hazard Class:** 9

**Packing Group:** III

**Passenger & Cargo Aircraft Packing Instruction:** 911

**Passenger & Cargo Aircraft Maximum Net Quantity:** 400 kg

**Limited Quantity Packing Instruction (Passenger & Cargo Aircraft):** Y911

**Limited Quantity Maximum Net Quantity (Passenger & Cargo Aircraft):** 30 kg

**Special Provisions:** A97 A149

**ERG Code:** 9L

## Material Safety Data Sheet

### Material Name: Oxalic Acid Dihydrate

#### **\*\*\* Section 14 - Transportation Information (Continued) \*\*\***

##### **International Maritime Organization (I.M.O.) Classification**

For shipments via marine vessel transport, the following classification information applies.

**Proper Shipping Name:** Not Regulated

**Hazard Class:** Not Applicable

**UN/NA #:** Not Applicable

**Packing Group:** Not Applicable

**Special Provisions:** Not Applicable

**Limited Quantities:** Not Applicable

**Packing Instructions:** Not Applicable

**EmS:** Not Applicable

**Stowage and Segregation:** Not Applicable

While the solid form of this material is not regulated, solutions of Oxalic Acid Dihydrate may meet the criteria for corrosive liquid under transportation regulations and should be tested for applicability of hazardous material transportation regulations.

#### **\*\*\* Section 15 - Regulatory Information \*\*\***

##### **US Federal Regulations**

###### **A: General Product Information**

No additional information.

###### **B: Component Analysis**

Oxalic Acid Dihydrate is not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

###### **Oxalic Acid Dihydrate (6153-56-6)**

CERCLA: Final RQ = Not Applicable

SARA 302 (EHS TPQ) There are no specific Threshold Planning Quantities for Salicylic Acid. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs. (4,540 kg) therefore applies, per 40 CFR 370.20.

###### **C: Sara 311/312 Tier H Hazard Ratings:**

Component	CAS #	Fire Hazard	Reactivity Hazard	Pressure Hazard	Immediate Health Hazard	Chronic Health Hazard
Oxalic Acid Dihydrate	6153-56-6	No	No	No	Yes	Yes
<u>Oxalic Acid</u>	<u>144-62-7</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>Yes</u>	<u>Yes</u>

##### **State Regulations**

###### **A: General Product Information**

###### **California Proposition 65**

Oxalic Acid Dihydrate is not on the California Proposition 65 chemical lists.

###### **B: Component Analysis - State**

The following components appear on one or more of the following state hazardous substance lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Oxalic Acid Dihydrate	6153-56-6	No	No	No	No	No	Yes
<u>Oxalic Acid</u>	<u>144-62-7</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>

## Material Safety Data Sheet

### Material Name: Oxalic Acid Dihydrate

\* \* \* **Section 15** - Regulatory Information (Continued) \* \* \*

#### Other Regulations

##### A: General Product Information

Component regulatory information lists CAS # 144-62-7 for Oxalic Acid, Anhydrous. This CAS number will predominate as the regulatory reference for Oxalic Acid Dihydrate; although CAS # 6153-56-6 also occasionally appears in non-regulatory literature representing Oxalic Acid Dihydrate.

##### B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Oxalic Acid Dihydrate	6153-56-6	Yes	Yes	Yes
Oxalic Acid	144-62-7	Yes	Yes	Yes

##### C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Maximum Concentration
Oxalic Acid Dihydrate	6153-56-6	100 percent
Oxalic Acid	144-62-7	1 percent

ANSI LABELING (Z129.1): **DANGER!** HARMFUL OR FATAL IF SWALLOWED. CAUSES SKIN AND EYE IRRITATION OR BURNS. HARMFUL IF INHALED. CHRONIC EXPOSURE MAY LEAD TO KIDNEY AND URINARY TRACT STONES. Keep from contact with clothing and other combustible materials. Do not taste or swallow. Do not get on skin or in eyes. Avoid breathing dusts or particulates. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, faceshields, suitable body protection, and NIOSH-approved respiratory protection, as Appropriate. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use water fog, dry chemical, CO<sub>2</sub>, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with inert material. Place residue in suitable container. Consult Material Safety Data Sheet for additional information.

\* \* \* **Section 16** - Other Information \* \* \*

#### Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration

## Univar USA Inc Material Safety Data Sheet

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For Additional Information contact MSDS Coordinator during business hours, Pacific time: (425) 889-3400

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PCN: 10360



## Safety Data Sheet

### Paraformaldehyde 91-93% Prills

Version 1.0

Revision Date: 10/17/2014

#### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name** : Paraformaldehyde 91-93% Prills  
**Product Use Description** : Chemical intermediate

##### Manufacturer or supplier's details

**Company** : Nexeo Solutions LLC  
**Address** : 3 Waterway Square Place Suite 1000  
Woodlands, Tx. 77380  
United States of America

##### Emergency telephone number:

Health North America: 1-855-NEXEO4U (1-855-639-3648)

Health International: 1-855-NEXEO4U (1-855-639-3648)

Transport North America: CHEMTREC 800.424.9300

**Additional Information** : Responsible Party: Product Safety Group  
E-Mail: msds@nexeosolutions.com  
SDS Requests: 1-855-429-2661  
SDS Requests Fax: 1-281-500-2370  
Website: www.nexeosolutions.com

#### SECTION 2. HAZARDS IDENTIFICATION

##### GHS Classification

Flammable solids : Category 2  
Acute toxicity (Oral) : Category 4  
Acute toxicity (Inhalation) : Category 4  
Skin irritation : Category 2  
Serious eye damage : Category 1  
Respiratory sensitisation : Category 1  
Skin sensitisation : Category 1  
Carcinogenicity : Category 1A  
Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

##### GHS Label element

## Safety Data Sheet

### Paraformaldehyde 91-93% Prills

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Hazard pictograms

:



Signal word

: Danger

Hazard statements

: H228 Flammable solid.  
H302 + H332 Harmful if swallowed or if inhaled  
H315 Causes skin irritation.  
H318 Causes serious eye damage.  
H335 May cause respiratory irritation.  
H317 May cause an allergic skin reaction.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H351 Suspected of causing cancer.

Precautionary statements

: **Prevention:**

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P240 Ground/bond container and receiving equipment.  
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P280 Wear protective gloves/ eye protection/ face protection.  
P281 Use personal protective equipment as required.  
P285 In case of inadequate ventilation wear respiratory protection.

**Response:**

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse



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cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P362 Take off contaminated clothing and wash before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

#### **Storage:**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

#### **Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

#### **Potential Health Effects**

##### **Carcinogenicity:**

###### **IARC**

Group 1: Carcinogenic to humans

50-00-0

Formaldehyde

###### **ACGIH**

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

###### **OSHA**

OSHA specifically regulated carcinogen

50-00-0

Formaldehyde

###### **NTP**

Known to be human carcinogen

50-00-0

Formaldehyde

#### **Emergency Overview**

Appearance	solid
Colour	white
Odour	pungent
Hazard Summary	No information available.



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#### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

##### Hazardous components

CAS-No.	Chemical Name	Concentration (%)
30525-89-4	Paraformaldehyde	90 - 100
50-00-0	Formaldehyde	0 - 0.1

Molecular formula :  $\text{HO}(\text{CH}_2\text{O})_n\text{H}$

Synonyms : Paraformaldehyde Prills, 91 - 97 %,

#### SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.  
Consult a physician.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.
- If inhaled : Call a physician or poison control centre immediately.  
If unconscious place in recovery position and seek medical advice.
- In case of skin contact : If skin irritation persists, call a physician.  
If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do NOT induce vomiting.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Take victim immediately to hospital.

## Safety Data Sheet

### Paraformaldehyde 91-93% Prills

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Revision Date: 10/17/2014

#### SECTION 5. FIREFIGHTING MEASURES

- |   |  |
|---|--|
| Suitable extinguishing media                  | : Alcohol-resistant foam<br>Carbon dioxide (CO <sub>2</sub> )<br>Dry chemical  |
| Unsuitable extinguishing media                | : High volume water jet  |
| Specific hazards during firefighting          | : Do not allow run-off from fire fighting to enter drains or water courses.  |
| Hazardous combustion products                 | : Carbon monoxide<br>Carbon dioxide (CO <sub>2</sub> )   |
| Specific extinguishing methods                | : Use a water spray to cool fully closed containers.   |
| Further information                           | : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.<br>For safety reasons in case of fire, cans should be stored separately in closed containments. |
| Special protective equipment for firefighters | : Wear self-contained breathing apparatus for firefighting if necessary.   |

#### NFPA Flammable and Combustible Liquids Classification:

Combustible Liquid Class IIIA

#### SECTION 6. ACCIDENTAL RELEASE MEASURES

- |   |   |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Use personal protective equipment.<br>Avoid dust formation.<br>Avoid breathing dust.<br>Ensure adequate ventilation.<br>Remove all sources of ignition.                                 |
| Environmental precautions   | : Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials   | : Contain spillage, and then collect with an electrically   |

## Safety Data Sheet

### Paraformaldehyde 91-93% Prills

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for containment and  
cleaning up

protected vacuum cleaner or by wet-brushing and  
place in container for disposal according to local regu-  
lations (see section 13).  
Keep in suitable, closed containers for disposal.

## SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Avoid formation of respirable particles.  
Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before  
use.  
Avoid contact with skin and eyes.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in  
the application area.  
Provide sufficient air exchange and/or exhaust in work  
rooms.  
Open drum carefully as content may be under pres-  
sure.  
Dispose of rinse water in accordance with local and  
national regulations.  
Persons susceptible to skin sensitisation problems or  
asthma, allergies, chronic or recurrent respiratory  
disease should not be employed in any process in  
which this mixture is being used.

Conditions for safe sto- : No smoking.  
rage Keep container tightly closed in a dry and well-  
ventilated place.  
Containers which are opened must be carefully re-  
sealed and kept upright to prevent leakage.  
Observe label precautions.  
Electrical installations / working materials must comp-  
ly with the technological safety standards.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

CAS-No.	Components	Value type (Form of exposure)	Control param- eters / Permissi- ble concentra- tion	Basis
50-00-0	Formaldehyde	C	0.3 ppm	ACGIH
		TWA	0.016 ppm	NIOSH REL
		C	0.1 ppm	NIOSH REL
		TWA	0.016 ppm	NIOSH REL

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			(Formaldehyde)	
		C	0.1 ppm (Formaldehyde)	NIOSH REL

#### Personal protective equipment

**Respiratory protection** : In the case of dust or aerosol formation use respirator with an approved filter.  
Dust safety masks are recommended when the dust concentration is more than 10 mg/m<sup>3</sup>.  
No personal respiratory protective equipment normally required.

**Hand protection**  
**Remarks** : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

**Eye protection** : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.

**Skin and body protection** : Dust impervious protective suit  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

**Hygiene measures** : When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

#### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** : solid

**Colour** : white

**Odour** : pungent

**Odour Threshold** : No data available

**pH** : 4.0 - 5.0 @ 1 % 25 °C (77 °F)

**Freezing Point (Melting point/range)** : 120 - 170 °C (248 - 338 °F)

**Boiling Point (Boiling point/boiling range)** : 120 °C (248 °F)  
Calculated Phase Transition Liquid/Gas

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Flash point	: 70 °C (158 °F)
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Burning rate	: No data available
Upper explosion limit	: 73 %(V)
Lower explosion limit	: 7 %(V)
Vapour pressure	: 1.9 hPa @ 25 °C (77 °F)
Relative vapour density	: 1.03
Relative density	: No data available
Density	: 1.46 g/cm <sup>3</sup> @ 15 °C (59 °F)
Bulk density	: No data available
Solubility(ies)	
Water solubility	: hydrolyses
Solubility in other sol- vents	: No data available
Partition coefficient: n- octanol/water	: No data available
Auto-ignition temperature	: 300 °C
Thermal decomposition	: No data available

#### SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Risk of violent reaction.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Product can undergo hazardous polymerization. Can form potentially explosive peroxides upon long standing in air.

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Conditions to avoid	: Keep away from heat, flame, sparks and other ignition sources. Exposure to air.
Incompatible materials	: Oxygen Oxidizing agents Reducing agents Acids Bases Amines
Hazardous decomposition products	: Carbon oxides nitrogen oxides Nitric acid Cyanides Nitriles

## SECTION 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

#### Product:

Acute oral toxicity	: Acute toxicity estimate : 818 mg/kg Method: Calculation method
Acute inhalation toxicity	: Acute toxicity estimate : 1.54 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
Acute dermal toxicity	: Acute toxicity estimate : > 5,000 mg/kg Method: Calculation method

#### Components:

##### **30525-89-4:**

Acute oral toxicity	: LD50 (rat): 800 mg/kg Assessment: The component/mixture is moderately toxic after single ingestion.
Acute inhalation toxicity	: LC50 (rat): 1070 Exposure time: 4 h Assessment: The component/mixture is moderately toxic after short term inhalation.
Acute dermal toxicity	: LD Lo (rabbit): 10,000 mg/kg

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#### 50-00-0:

Acute inhalation toxicity : LC50 : 0.48 mg/l  
Exposure time: 4 h  
Assessment: The component/mixture is toxic after short term inhalation.

#### Skin corrosion/irritation

##### Product:

Remarks: Irritating to skin.

##### Components:

#### 30525-89-4:

Species: rabbit  
Result: Irritating to skin.

#### 50-00-0:

Species: rabbit  
Method: OECD Test Guideline 404  
Result: Corrosive after 3 minutes to 1 hour of exposure

#### Serious eye damage/eye irritation

##### Product:

Remarks: Risk of serious damage to eyes.

##### Components:

#### 30525-89-4:

Species: rabbit  
Result: Risk of serious damage to eyes.

#### 50-00-0:

Result: Risk of serious damage to eyes.  
Remarks: No data available

#### Respiratory or skin sensitisation

##### Product:

Remarks: Causes sensitisation.

##### Components:

#### 30525-89-4:

Test Type: Maximization test  
Species: guinea pig  
Result: May cause sensitisation by skin contact.

Result: May cause sensitisation by inhalation.

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Remarks: No data available

#### 50-00-0:

Test Type: lymph node assay

Species: mouse

Result: May cause sensitisation by skin contact.

#### Germ cell mutagenicity

##### Components:

##### 30525-89-4:

Genotoxicity in vitro : Remarks: No data available

Germ cell mutagenicity-  
Assessment : Mutagenicity classification not possible from current data

#### 50-00-0:

Genotoxicity in vitro : Test Type: Ames test  
Test species: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Result: positive

Genotoxicity in vivo : Test Type: Chromosome aberration assay in vivo  
Test species: mouse  
Application Route: Intraperitoneal  
Result: negative

Germ cell mutagenicity-  
Assessment : In vitro tests showed mutagenic effects which were not observed with in vivo test.

#### Carcinogenicity

##### Components:

##### 30525-89-4:

Species: rat, (male and female)

Application Route: Oral

Exposure time: 104 wk

Dose: 10, 50, 100, 500, 1000, 1500mg/L

Frequency of Treatment: daily ad libitum

Method: OECD Test Guideline 451

Result: Ambiguous

GLP: No data available

Test substance: Information given is based on data obtained from similar substances.

Remarks: Category 2

Carcinogenicity - Assessment : Suspected human carcinogens



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#### 50-00-0:

Species: rat, (male and female)  
Application Route: Oral  
Exposure time: 104 wk  
Dose: 10 - 1500mg/L  
Frequency of Treatment: daily ad libitum  
Result: evidence of carcinogenic activity

Carcinogenicity - Assessment : Suspected human carcinogens

#### Reproductive toxicity

##### Components:

#### 30525-89-4:

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

Reproductive toxicity - Assessment : Fertility classification not possible from current data.  
Embryotoxicity classification not possible from current data.

#### 50-00-0:

Effects on foetal development : Species: rat  
Application Route: Inhalation  
Dose: 0, 2, 5, 10 ppm  
Duration of Single Treatment: 9 d  
Frequency of Treatment: 6 hr/day  
General Toxicity Maternal: NOAEC: 5 ppm  
Developmental Toxicity: NOAEC: 10 ppm  
Method: OECD Test Guideline 414  
Result: No teratogenic effects.  
GLP: yes

Reproductive toxicity - Assessment : Animal testing did not show any effects on foetal development.

#### STOT - single exposure

Product:No data available

##### Components:

#### 30525-89-4:

Exposure routes:	Target Organs:	Assessment:	Remarks:
Inhalation	Respiratory Tract	May cause respiratory irritation., The substance or mixture is classified as specific target or-	



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		gan toxicant, single exposure, category 3 with respiratory tract irritation.	
--	--	--	--

50-00-0: No data available

#### STOT - repeated exposure

**Product:** No data available

#### Components:

**30525-89-4:** No data available

50-00-0: No data available

#### Repeated dose toxicity

#### Components:

**30525-89-4:**

Remarks: This information is not available.

#### **50-00-0:**

Species: rat, male

NOAEL: 15 mg/kg

LOAEL: 82 mg/kg

Application Route: Oral

Dose: 0, 1.2, 15, 82 mg/kg bw/day

Method: OECD Test Guideline 453

GLP: yes

Target Organs: Stomach

Repeated dose toxicity - Assessment : Toxic if inhaled., Toxic in contact with skin., Toxic if swallowed., Causes severe skin burns and eye damage.

#### Aspiration toxicity

#### Product:

No aspiration toxicity classification

#### Further information

#### Product:

Remarks: No data available



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#### SECTION 12. ECOLOGICAL INFORMATION

##### Ecotoxicity

###### Components:

###### **30525-89-4:**

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 39.1 mg/l  
Exposure time: 96 h  
Test Type: flow-through test

###### Ecotoxicology Assessment

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

###### **50-00-0:**

Toxicity to fish : LC50 (Striped bass (Morone saxatilis)): 6.7 mg/l  
Exposure time: 96 h  
Test Type: static test  
GLP: no

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia pulex (Water flea)): 5.8 mg/l  
Exposure time: 48 h  
Test Type: static test  
Method: OECD Test Guideline 202  
GLP: no

Toxicity to algae : EC50 (Desmodesmus subspicatus): 3.48 mg/l  
End point: Biomass  
Exposure time: 72 h  
Test Type: static test  
Method: OECD Test Guideline 201  
GLP: no

##### Persistence and degradability

###### Components:

###### **30525-89-4:**

Biodegradability : Remarks: No data available

###### **50-00-0:**

Biodegradability : Biodegradation: 100 %  
Exposure time: 4 d  
Method: OECD Test Guideline 301C  
GLP: no  
Remarks: Readily biodegradable



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#### Bioaccumulative potential

##### Components:

##### 50-00-0:

Partition coefficient: n-octanol/water : Pow: 0.35 (25 °C)

#### Mobility in soil

No data available

#### Other adverse effects

No data available

##### Product:

##### Regulation

40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

##### Remarks

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

##### Additional ecological information

: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Harmful to aquatic life with long lasting effects.

## SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

##### Waste from residues

: Dispose of in accordance with all applicable local, state and federal regulations.  
For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact NEXO's Environmental Services Group at 800-637-7922.

##### Contaminated packaging

: Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.  
Do not burn, or use a cutting torch on, the empty drum.

## SECTION 14. TRANSPORT INFORMATION

**IATA (International Air Transport Association):** UN2213, PARAFORMALDEHYDE, 4.1, III, Flash Point: 70 °C(158 °F)



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**IMDG (International Maritime Dangerous Goods):** UN2213, PARAFORMALDEHYDE, 4.1, III

**DOT (Department of Transportation):** UN2213, PARAFORMALDEHYDE, 4.1, III

#### SECTION 15. REGULATORY INFORMATION

**OSHA Hazards** : Carcinogen, Harmful by ingestion., Moderate skin irritant, Severe eye irritant, Moderate respiratory irritant

**WHMIS Classification** : D2A: Very Toxic Material Causing Other Toxic Effects  
D2B: Toxic Material Causing Other Toxic Effects

#### EPCRA - Emergency Planning and Community Right-to-Know Act

##### CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Paraformaldehyde	30525-89-4	1000	1031

##### SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Formaldehyde	50-00-0	100	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

**SARA 311/312 Hazards** : Chronic Health Hazard  
Acute Health Hazard  
Fire Hazard

**SARA 302** : The following components are subject to reporting levels established by SARA Title III, Section 302:

50-00-0 Formaldehyde 0.1 %

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

50-00-0 Formaldehyde 0.1 %

#### Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

50-00-0 Formaldehyde 0.1 %



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The following chemical(s) are listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F):

50-00-0 Formaldehyde 0.1 %

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489):

50-00-0 Formaldehyde 0.1 %

#### Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

30525-89-4 Paraformaldehyde 97 %

50-00-0 Formaldehyde 0.1 %

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

50-00-0 Formaldehyde 0.1 %

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

#### US State Regulations

##### Massachusetts Right To Know

50-00-0 Formaldehyde 0 - 0.1 %

##### Pennsylvania Right To Know

30525-89-4 Paraformaldehyde 91 - 97 %

50-00-0 Formaldehyde 0 - 0.1 %

##### New Jersey Right To Know

30525-89-4 Paraformaldehyde 91 - 97 %

50-00-0 Formaldehyde 0 - 0.1 %

##### California Prop 65

WARNING! This product contains a chemical known to the State of California to cause cancer.

50-00-0 Formaldehyde

The components of this product are reported in the following inventories:

Switzerland. New notified substances and declared preparations	:	n (Negative listing) (The formulation contains substances listed on the Swiss Inventory)
United States TSCA Inventory	:	y (positive listing) (On TSCA Inventory)
Canadian Domestic Substances List (DSL)	:	y (positive listing) (All components of this product are on the Canadian DSL.)

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<b>Australia Inventory of Chemical Substances (AICS)</b>	:	y (positive listing) (On the inventory, or in compliance with the inventory)
<b>New Zealand. Inventory of Chemical Substances</b>	:	y (positive listing) (On the inventory, or in compliance with the inventory)
<b>Japan. ENCS - Existing and New Chemical Substances Inventory</b>	:	y (positive listing) (On the inventory, or in compliance with the inventory)
<b>Japan. ISHL - Inventory of Chemical Substances (METI)</b>	:	y (positive listing) (On the inventory, or in compliance with the inventory)
<b>Korea. Korean Existing Chemicals Inventory (KECI)</b>	:	y (positive listing) (On the inventory, or in compliance with the inventory)
<b>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</b>	:	y (positive listing) (On the inventory, or in compliance with the inventory)
<b>China. Inventory of Existing Chemical Substances in China (IECSC)</b>	:	y (positive listing) (On the inventory, or in compliance with the inventory)

## Safety Data Sheet Paraformaldehyde 91-93% Prills

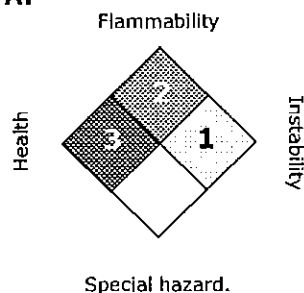
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### SECTION 16. OTHER INFORMATION

#### Further information

##### NFPA:



##### HMIS III:

HEALTH	3*
FLAMMABILITY	2
PHYSICAL HAZARD	1

0 = not significant, 1 = Slight,  
2 = Moderate, 3 = High  
4 = Extreme, \* = Chronic

The information accumulated is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by NEXEO™ Solutions EHS Product Safety Department (1-855-429-2661) MSDS@nexeosolutions.com.

**Legacy MSDS:** R0003604

#### Material number:

688930, 663524, 105439, 106067, 87809, 88792, 32562, 20357

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure	OSHA	Occupational Safety & Health Admin-





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	Scenario Tool		istration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50			Lethal Concentration 50%



## SAFETY DATA SHEET

### SODIUM NITRATE

Product No: 002/05-US

#### Section 1 : Identification of the Substance and of the Company

---

Product Name : Sodium Nitrate  
Use of the Product : Product for agriculture or industrial use.  
Supplier : SQM Northamerica Corporation  
Address : 2727 Paces Ferry Road  
Building Two, Suite 1425  
Atlanta, GA 30339  
Telephone : (770) 916 9400  
Fax : (770) 916 9401  
e-mail : [product\\_safety@sqm.com](mailto:product_safety@sqm.com)  
Emergency Number : (800) 424 9300 (CHEMTREC)

#### Section 2 : Hazards Identification

---

##### Emergency Overview

Oxidizer. Contact with combustible material will not cause spontaneous ignition. However, substance will enhance an existing fire (Class 1 oxidizer according to NFPA).

##### NFPA Ratings

Health : 1  
Flammability : 0  
Reactivity : 1  
Special : Oxidizer

##### Potential Health Effects

Inhalation : Inhalation of dust irritates the respiratory tract. Symptoms may include coughing.  
Ingestion : Hazardous in case of ingestion.  
Skin Contact : May cause irritation, specially with wet skin.  
Eye Contact : May cause irritation, eye redness, itching and pain.

#### Section 3 : Composition/Information on Ingredients

---

Chemical Name : Sodium Nitrate  
CAS No. : 7631-99-4  
EINECS No. : 231-554-3  
Molecular Weight : 84.99  
Formula :  $\text{NaNO}_3$   
Content : > 95%



## Section 4 : First Aid Measures

---

### General Information

In case of persisting adverse effects consult a physician.

### Specific Measures

Inhalation	Remove to fresh air. Get medical attention for any breathing difficulty.
Ingestion	Induce vomiting. Never give anything by mouth (oral) to an unconscious person.
Skin Contact	In case of irritation, remove clothing. Wipe excess from skin. Wash with soap and water for at least 5 minutes.
Eye Contact	Flush eyes with plenty of water, lifting lower and upper eyelids occasionally.

## Section 5 : Firefighting Measures

---

Fire	Non combustible, but contact with combustible substances under a fire will increase combustion rate. For thermal decomposition products, refer to Section 10.
Extinguishing Media	
- Suitable	Any mean suitable for extinguishing surrounding fire. Spray water for small fires. For large fires flood with abundant water
- Not Suitable	-
Protective equipment:	Refer to section 8.

## Section 6 : Accidental Release Measures

---

Personal Precautions	: Ventilate the area. Use personal protective equipment (Section 8).
Environmental Precautions:	Do not discharge into drains. Avoid surface and ground water contamination.
Methods for Cleaning Up/Taking Up	: Pick up the product mechanically and store in suitable containers for recovery or disposal.

## Section 7 : Handling and Storage

---

Handling	
Special Procedures	None
Safe Handling Procedures	Minimize dust generation. Avoid contact with eyes and skin.
Special Advices	See Section 10.



#### **Storage**

Special Requirements      Reseal carefully any opened container and set upright to avoid leakages. Keep the product in the original containers.

Storage Conditions        Keep away from flammable substances Do not store with combustibles reducing agents. Keep containers tightly closed in well ventilated and cool place.

### **Section 8 : Exposure Controls / Personal Protection**

---

#### **Exposure Limits**

Suggested according to US regulations: 15 mg/m<sup>3</sup> (total dust) ; 5 mg/m<sup>3</sup> (respirable fraction)

#### **Exposure Controls**

Local exhaust ventilation to keep low dust environment.

#### **Personal Protective Equipment**

Respiratory                Dust mask if necessary, *i.e.* in case of dust emission or dusty environments

Eyes                        Safety goggles required all the time.

Hands                      Nitrile rubber gloves, over 0.11 mm thickness, > 480 min breakthrough time.

#### **Hygiene Measures**

Do not drink, eat or smoke during product manipulation. Keep away from foodstuffs and beverages.  
Wash hands before breaks and after work.

Personal Protective      Wear dust mask if necessary, nitrile rubber gloves and chemical safety  
Equipment                goggles.

Hygiene Measures        Do not drink, eat or smoke during product manipulation. Keep away  
from foodstuffs and beverages. Wash hands before breaks and after  
work.

### **Section 9 : Physical and Chemical Properties**

---

Physical Form            : Solid, prilled or crystalline

Color                      : White

Odor                       : Odorless

pH                         : 6-9 (5% aqueous solution)

Melting Point            : 308°C

Boiling Point             : not applicable



Flash Point : not applicable  
Flammability : not flammable  
Explosive Properties : not applicable  
Thermal Decomposition : > 550°C  
Specific Gravity : 2.26 g/mL  
Water Solubility : 480 g/L (20 °C )  
Partition Coefficient (log P<sub>ow</sub>) : not applicable

### Section 10 : Stability and Reactivity

---

Stability Stable under normal storage and temperature conditions.

Conditions to avoid Keep away from flammable, combustible and reducing substances.

Hazardous  
Decomposition Products Nitrous oxides, sodium nitrite and sodium oxide by thermal decomposition.

### Section 11 : Toxicological Information

---

#### Acute Data

Oral LD<sub>50</sub> (rat) : > 2000 mg/Kg  
Dermal LD<sub>50</sub> (rat) : no data available  
Inhalation LC<sub>50</sub>: no data available

#### Short-term Effects

Inhalation may cause irritation of the respiratory tract. Can cause skin and eye irritation.

#### Chronic Effects

No adverse effects observed on developmental toxicity. Equivocal carcinogenic agent according to animal tests. Mutagenic and reproductive hazard at very high level doses according to animal tests.

### Section 12 : Ecological Information

---

#### General

Do not discharge into drains and water or public depositories.

#### Environmental Fate

Sodium Nitrate dissociates into sodium and nitrate ions. Nitrates may be absorbed by plants and converted into organic nitrogen, whereas sodium binds to clay particles in the soil.



Zooplankton Toxicity  
Species : Daphnia magna  
LC<sub>50</sub> 3581 mg/L (48 h)

Fish Toxicity  
Species: Rainbow trout  
LC<sub>50</sub> 1658 mg/L (96 h)

Not acutely toxic to aquatic organisms.

**Mobility**

Predicted Distribution: Water, 45% ; Soil, 54.7%

**Section 13 : Disposal Considerations**

---

Residues : Licensed professional waste disposal service is required. Disposal of waste according to all federal, state and local regulations.  
Empty Packaging : Empty containers may be reused after appropriate cleansing. Packaging that can not be cleaned should be disposed in agreement with the regional waste disposal company.

**Section 14 : Transport Information**

---

**Rail & Road (DOT) – Sea (IMDG Code) – Air (IATA)**

Proper Shipping Name Sodium Nitrate.  
UN Number 1498  
Class 5.1  
Packaging Group III  
Hazard Label Oxidizing

**Section 15 : Regulatory Information**

---

**US Classification**

Indication of Danger Oxidizing.  
Risk statements Contact with combustible material under a fire will enhance combustion.  
Safety Statements Keep away from combustible material.  
Avoid contact with skin and eyes.  
SARA Not listed  
TSCA Listed  
Prop. 65 (California) Not listed

SQM Northamerica  
2727 Paces Ferry Road  
Building Two, Suite 1425  
Atlanta, GA 30339  
Tel : (770) 916 9400  
Fax : (770) 916 9400  
[www.sqm.com](http://www.sqm.com)



## **Section 16 : Other Information**

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This MSDS complies with 29 CFR part 1910 subpart Z and ANSI Standard Z400.1-2004.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall SQM be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if SQM has been advised of the possibility of such damages.

Issued : October 2009  
Supersedes edition of : October 2008

## Univar USA Inc Material Safety Data Sheet

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For Additional Information contact MSDS Coordinator during business hours, Pacific time: (425) 889-3400

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This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process



**Sulfolene**

Version 4.1

Revision Date 2018-05-31

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product information**

Product Name : Sulfolene  
Material : 1094561, 1024666, 1024665, 1024664, 1024663, 1024662,  
1024667

Use : Chemical intermediate

**Company** : Chevron Phillips Chemical Company LP  
Specialty Chemicals  
10001 Six Pines Drive  
The Woodlands, TX 77380

**Emergency telephone:****Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

**Transport:**

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Mexico CHEMTREC 01-800-681-9531 (24 hours)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Argentina: +(54)-1159839431

Responsible Department : Product Safety and Toxicology Group  
E-mail address : SDS@CPChem.com  
Website : www.CPChem.com

**SECTION 2: Hazards identification****Classification of the substance or mixture**

This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

**Classification**

: Combustible dust  
Eye irritation, Category 2A

**Labeling**

**Sulfolene**

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Symbol(s)

:



Signal Word

:

Warning

Hazard Statements

:

May form combustible dust concentrations in air.  
H319: Causes serious eye irritation.

Precautionary Statements

:

**Prevention:**

P264 Wash skin thoroughly after handling.

P280 Wear eye protection/ face protection.

**Response:**

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

**Carcinogenicity:****IARC**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**NTP**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**ACGIH**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**SECTION 3: Composition/information on ingredients**

Synonyms

:

3-Sulfolene  
2,5-Dihydrothiophene-1,1-dioxide

Molecular formula

:

C<sub>4</sub>H<sub>6</sub>SO<sub>2</sub>

Component	CAS-No.	Weight %
Sulfolene	77-79-2	90 - 100

**SECTION 4: First aid measures**

General advice

:

Move out of dangerous area. Show this material safety data sheet to the doctor in attendance.

If inhaled

:

If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact

:

Wash off with warm water and soap.

In case of eye contact

:

Immediately flush eye(s) with plenty of water. Remove contact

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lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

**SECTION 5: Firefighting measures**

Flash point : 113 °C (235 °F) estimated

Autoignition temperature : No data available

Unsuitable extinguishing media : High volume water jet.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

Further information : Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Fire and explosion protection : Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.

Hazardous decomposition products : Butadiene. Sulfur oxides.

**SECTION 6: Accidental release measures**

Personal precautions : Use personal protective equipment. Avoid dust formation. Avoid breathing dust.

Environmental precautions : Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up : Keep in suitable, closed containers for disposal.

**SECTION 7: Handling and storage****Handling**

Advice on safe handling : Avoid formation of respirable particles. Do not breathe vapors/dust. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.

**Storage**

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Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

**SECTION 8: Exposure controls/personal protection****Ingredients with workplace control parameters****US**

Ingredients	Basis	Value	Control parameters	Note
Sulfur dioxide	ACGIH	STEL	0.25 ppm,	pulm func, LRT irr, A4,
	OSHA Z-1	TWA	5 ppm, 13 mg/m3	(b),
	OSHA Z-1-A	TWA	2 ppm, 5 mg/m3	
	OSHA Z-1-A	STEL	5 ppm, 13 mg/m3	

(b) The value in mg/m3 is approximate.  
 A4 Not classifiable as a human carcinogen  
 LRT irr Lower Respiratory Tract irritation  
 pulm func Pulmonary function

Contains no substances with occupational exposure limit values.

**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

- Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Dusts and Mists / P100. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
- Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
- Eye protection : Eye wash bottle with pure water. Safety glasses.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Protective suit. Safety shoes.

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Hygiene measures : When using do not eat or drink. When using do not smoke.  
Wash hands before breaks and at the end of workday.

**SECTION 9: Physical and chemical properties****Information on basic physical and chemical properties****Appearance**

Form : Crystalline solid  
Physical state : Solid  
Color : White to off-white  
Odor : pungent

**Safety data**

Flash point : 113 °C (235 °F)  
estimated

Lower explosion limit : No data available

Upper explosion limit : No data available

Oxidizing properties : no

Autoignition temperature : No data available

Molecular formula : C<sub>4</sub>H<sub>6</sub>SO<sub>2</sub>

Molecular weight : 118.16 g/mol

pH : Not applicable

Freezing point : No data available

Pour point : No data available

Boiling point/boiling range : Not applicable

Vapor pressure : Not applicable

Relative density : 1.31  
at 15.6 °C (60.1 °F), estimated

Water solubility : 13% at 20C (68F)

Partition coefficient: n-octanol/water : No data available

Viscosity, kinematic : Not applicable

Relative vapor density : Not applicable

Evaporation rate : Not applicable

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**SECTION 10: Stability and reactivity**

Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**Possibility of hazardous reactions**

Conditions to avoid : No data available.  
Hazardous decomposition products : Butadiene  
Sulfur oxides

Other data : No decomposition if stored and applied as directed.

**SECTION 11: Toxicological information****Acute oral toxicity**

Sulfolene : LD50: 2,876 mg/kg  
Species: Rat  
Sex: male and female  
Method: OECD Test Guideline 401

**Acute inhalation toxicity**

Sulfolene : Exposure time: 4 h  
Species: Rat  
Sex: male and female  
Test atmosphere: vapor  
Method: OECD Test Guideline 403  
An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

**Skin irritation**

Sulfolene : No skin irritation

**Eye irritation**

Sulfolene : Eye irritation

**Sensitization**

Sulfolene : Did not cause sensitization on laboratory animals.

**Repeated dose toxicity**

Sulfolene : Species: rat (male)  
Application Route: oral gavage  
Dose: 0, 25, 75, 150 mg/kg/d  
Exposure time: 28 d

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Number of exposures: daily  
NOEL: 25 mg/kg  
Lowest observable effect level: 75 mg/kg  
Method: OECD Guideline 422  
Target Organs: Kidney, Liver

Species: rat (female)  
Application Route: oral gavage  
Dose: 0, 10, 25, 75mg/kg/d  
Exposure time: 40 - 52 d  
Number of exposures: daily  
NOEL: 25 mg/kg  
Lowest observable effect level: 75 mg/kg  
Method: OECD Guideline 422

Species: Mouse, male  
Sex: male  
Application Route: oral gavage  
Dose: 316,562,1000,1780,3160 mg/kg/d  
Exposure time: 6 wk  
Number of exposures: 5 d/wk  
NOEL: 3,160 mg/kg  
Lowest observable effect level: 316 - 3,160 mg/kg

Species: Mouse, female  
Sex: female  
Application Route: oral gavage  
Dose: 316,562,1000,1780,3160 mg/kg/d  
Exposure time: 6 wk  
Number of exposures: 5 d/wk  
NOEL: 178 mg/kg  
Lowest observable effect level: 316 - 3,160 mg/kg

**Carcinogenicity**

Sulfolene

: Species: Rat  
Sex: female  
Dose: 0, 120, 240 mg/kg  
Exposure time: 60-78 wks  
Number of exposures: 5 d/wk  
Remarks: No evidence of carcinogenicity

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Species: Rat  
 Sex: male  
 Dose: 0, 197, 372 mg/kg  
 Exposure time: 60-78 wks  
 Number of exposures: 5 d/wk  
 Remarks: No evidence of carcinogenicity

Species: Mouse  
 Sex: female  
 Dose: 0, 384, 768 mg/kg  
 Exposure time: 60-78 wks  
 Number of exposures: 5 d/wk  
 Remarks: No evidence of carcinogenicity

Species: Mouse  
 Sex: male  
 Dose: 0, 311, 622 mg/kg  
 Exposure time: 60-78 wks  
 Number of exposures: 5 d/wk  
 Remarks: No evidence of carcinogenicity

**Reproductive toxicity**

Sulfolene : Species: Rat  
 Sex: male  
 Application Route: oral gavage  
 Dose: 0, 25, 150 mg/kg/d  
 Exposure time: 28 d  
 Number of exposures: daily  
 Method: OECD Guideline 422  
 NOAEL Parent: 75 mg/kg

Species: Rat  
 Sex: female  
 Application Route: oral gavage  
 Dose: 0, 10, 25, 75 mg/kg/d  
 Exposure time: 40 - 52 d  
 Number of exposures: daily  
 Method: OECD Guideline 422  
 NOAEL Parent: 75 mg/kg  
 NOAEL F1: 25 mg/kg

**Sulfolene**  
**Aspiration toxicity** : No aspiration toxicity classification.

**Sulfolene**  
**Further information** : No data available.

**SECTION 12: Ecological information****Toxicity to fish**

Sulfolene : LC50: 940 mg/l  
 Exposure time: 96 h  
 Species: Salmo gairdneri (Rainbow trout)  
 static test Method: OECD Test Guideline 203



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**Toxicity to daphnia and other aquatic invertebrates**

Sulfolene : EC50: 800 mg/l  
Exposure time: 48 h  
Species: Daphnia magna (Water flea)  
Immobilization Method: OECD Test Guideline 202

**Toxicity to algae**

Sulfolene : EC50: > 1,000 mg/l  
Exposure time: 4 Days  
Species: Selenastrum capricornutum (algae)  
Growth inhibition Method: OECD Test Guideline 201

**Biodegradability**

Sulfolene : aerobic  
Result: Not readily biodegradable.  
2 %  
Testing period: 28 d  
Method: OECD Test Guideline 301B

**Ecotoxicology Assessment**

Additional ecological information : This material is not expected to be harmful to aquatic organisms.

**SECTION 13: Disposal considerations**

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

**SECTION 14: Transport information**

**The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).**

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

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**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR  
TRANSPORTATION BY THIS AGENCY.

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR  
TRANSPORTATION BY THIS AGENCY.

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN3335, AVIATION REGULATED SOLID, N.O.S., (2,5-DIHYDROTHIOPEHENE-1,1-DIOXIDE),  
9

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR  
TRANSPORTATION BY THIS AGENCY.

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF  
DANGEROUS GOODS (EUROPE))**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR  
TRANSPORTATION BY THIS AGENCY.

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE  
OF DANGEROUS GOODS BY INLAND WATERWAYS)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR  
TRANSPORTATION BY THIS AGENCY.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

**SECTION 15: Regulatory information****National legislation**

**SARA 311/312 Hazards** : Combustible dust  
Serious eye damage or eye irritation

**EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO - KNOW**

**SARA 302 Threshold  
Planning Quantity** : No chemicals in this material are subject to the reporting  
requirements of SARA Title III, Section 302.

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**SARA 313 Ingredients** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**Clean Air Act**

**Ozone-Depletion Potential** : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

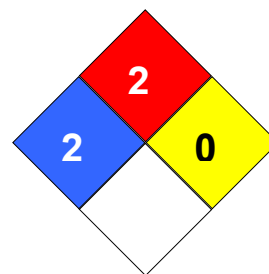
**California Prop. 65 Ingredients** : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

**Notification status**

Europe REACH	:	Not in compliance with the inventory
United States of America (USA) TSCA	:	On the inventory, or in compliance with the inventory
Canada DSL	:	On the inventory, or in compliance with the inventory
Australia AICS	:	Not in compliance with the inventory
New Zealand NZIoC	:	Not in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	On the inventory, or in compliance with the inventory
China IECSC	:	Not in compliance with the inventory

**SECTION 16: Other information**

**NFPA Classification** : Health Hazard: 2  
Fire Hazard: 2  
Reactivity Hazard: 0

**Further information**

Legacy SDS Number : 25500

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

**Sulfolene**

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The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

# SAFETY DATA SHEET

## TOLYLTRIAZOLE



Version 3.1

Revision Date 05/11/2017

Print Date 05/12/2017

### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name** : TOLYLTRIAZOLE

**Other means of Identification** : 10863

**Recommended use** : Component of lubricant or fuel additives

**Restrictions on use** : This material should not be used for any other purpose than that recommended without expert advice.

**Manufacturer or supplier's details** : INFINEUM USA L.P.  
P.O. Box CN 135  
Linden, NJ. 07036 USA

E-mail address for further information : [SDS@infineum.com](mailto:SDS@infineum.com)

Website for further information : <http://www.infineum.com>

Emergency telephone number : 703-527-3887 (international & maritime)  
800-424-9300 (Transportation emergencies in the USA & Canada)

### SECTION 2. HAZARDS IDENTIFICATION

**Classification of the chemical in accordance with paragraph (d) of §1910.1200**

**This material is considered to be hazardous according to regulations.**

#### GHS-Classification

Acute toxicity (Oral) : Category 4

Hazard statements:

H302: Harmful if swallowed.

#### GHS Label elements, including precautionary statements

Pictogram:



Signal word: Warning

Hazard statements:

# SAFETY DATA SHEET

## TOLYLTRIAZOLE



Version 3.1

Revision Date 05/11/2017

Print Date 05/12/2017

H302: Harmful if swallowed.

Precautionary statements:

### Prevention

P264: Wash skin thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

### Response

P301 + P312 + P330: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.  
Rinse mouth.

### Disposal

P501: Dispose of contents/ container to an approved waste disposal plant.

Contains: Tolyltriazole

### **Other hazards which do not result in classification**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT).  
This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**HMIS Classification** : Health: 1  
Flammability: 1  
Physical hazards: 0

**NFPA Classification** : Health: 1  
Flammability: 1  
Instability: 0

## **SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

### **Hazardous components**

Name	CAS number or other code	Concentration [%]
Tolyltriazole	29385-43-1	>= 90 - <= 100

All concentrations are weight percent units for liquids or volume percent units for gaseous products.

Other ingredients are either not hazardous or are below the regulatory disclosure limit..

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

**SECTION 4. FIRST AID MEASURES****Description of first aid measures**

- General advice** : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.
- If inhaled** : If unconscious, place in recovery position and seek medical advice.  
If symptoms persist, call a physician.
- In case of skin contact** : Take off contaminated clothing and shoes immediately.  
Wash off with soap and plenty of water.  
If symptoms persist, call a physician.
- In case of eye contact** : Flush eyes with water as a precaution.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists: Get medical advice/ attention.
- If swallowed** : Clean mouth with water and drink afterwards plenty of water.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
Obtain medical attention.

**Most important symptoms and effects, both acute and delayed**

- Symptoms : No symptoms known or expected.

**Indication of any immediate medical attention and special treatment needed**

- Treatment : Show this safety data sheet to the doctor in attendance.  
The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.  
If a person vomits when lying on his back, place him in the recovery position.  
Keep patient warm and at rest.

- Protection of first-aiders** : For personal protection see section 8.

**SECTION 5. FIREFIGHTING MEASURES****Extinguishing media**

- Suitable extinguishing media** : Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames

**Unsuitable extinguishing media** : High volume water jet

**Specific hazards arising from the chemical**

Combustibility : Not classified as flammable or combustible, but will combust if ignited.

Hazardous combustion products : Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

Nitrogen oxides (NO<sub>x</sub>)

Flammable properties : See Section 9 for information on flammability.

**Special protective equipment and precautions for fire-fighters**

**Protective equipment and precautions for firefighters** : In the event of fire, wear self-contained breathing apparatus. Exposure to decomposition products may be a hazard to health.

**Fire Fighting Instructions** : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions, protective equipment and emergency procedures** : Advice for emergency responders  
Ensure adequate ventilation.  
Use personal protective equipment.  
Avoid dust formation.  
Avoid breathing dust.  
For personal protection see section 8.

Advice for non-emergency personnel  
Avoid contact with spilled material. Do not touch or walk through spilled material.

**Environmental precautions** : Prevent entry into waterways, sewers, basements or confined areas.

Local authorities should be advised if significant spillages cannot be contained.  
Do not flush into surface water or sanitary sewer system.  
Prevent further leakage or spillage if safe to do so.



# SAFETY DATA SHEET

## TOLYLTRIAZOLE



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Try to prevent the material from entering drains or water courses.  
If the product contaminates rivers and lakes or drains inform respective authorities.

### Methods and materials for containment and cleaning up

: Prevent further leakage or spillage if safe to do so.  
Scrape up with shovels into a suitable container for later disposal

Report spills as required to appropriate authorities.  
Seek the advice of a specialist before using dispersants.  
Dispose of according to local regulations.  
In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.  
Material will float on water, use containment booms as a barrier to protect shorelines.  
Remove material, as much as possible, using mechanical equipment.

Pick up and arrange disposal without creating dust.  
Keep in suitable, closed containers for disposal.  
Clean contaminated floors and objects thoroughly while observing environmental regulations.

### Reference to other sections

#### Other information

: For personal protection see section 8.  
See section 13

## SECTION 7. HANDLING AND STORAGE

### Precautions for safe handling

Avoid formation of respirable particles.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
Dispose of rinse water in accordance with local and national regulations.

Avoid dust formation.  
Provide appropriate exhaust ventilation at places where dust is formed.

Products may load from Infineum manufacturing site above the standard loading/unloading range.

Loading/unloading temperature : No data available

Viscosity @ : No data available

## SAFETY DATA SHEET

## TOLYLTRIAZOLE



Version 3.1

Revision Date 05/11/2017

Print Date 05/12/2017

Loading/unloading  
temperature

Static accumulator : This material is not a static accumulator.

**Conditions for safe storage, including any incompatibilities**

Keep container tightly closed in a dry and well-ventilated place.

No decomposition if stored and applied as directed.

Storage temperature :  $\leq 50^{\circ}\text{C}$  ( $122^{\circ}\text{F}$ )

Incompatible materials and  
coatings : No data available

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Exposure Limit Values**

Substance name					
Form	Limit / Standard			Note	Source
Tolyltriazole					
	TWA		10 mg/m3		ACGIH

Limits/standards shown for guidance only. Follow applicable regulations.

**Occupational exposure controls**

Appropriate engineering controls : No special requirements under ordinary conditions of use and with adequate ventilation.

**Individual protection measures, such as personal protective equipment**

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Hand protection : Polyvinyl alcohol or nitrile- butyl-rubber gloves  
Before removing gloves clean them with soap and water.  
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Eye protection : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Ensure that eyewash stations and safety showers are close to the workstation location.

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Skin and body protection : Dust impervious protective suit  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

### Advice on general occupational hygiene

Hygiene measures : When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and immediately after handling the product.  
Remove contaminated clothing and protective equipment before entering eating areas.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

### Information on basic physical and chemical properties

Physical state : solid  
Form : granular  
Colour : off-white  
Odour : characteristic  
Odour Threshold : not determined

### Important health safety and environmental information

Relative density : not determined  
Bulk density : not determined  
Density : not determined  
Flash point : 182 °C (360 ° F)  
Method: Cleveland Open Cup (ASTM D92)  
Flammability (solid, gas) : not determined  
lower flammability limit : not determined  
Upper flammability limit : not determined  
Auto-ignition temperature : Not applicable  
Initial boiling point and boiling range : Not applicable

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Vapour density (Air = 1.0)	: not determined
Vapour pressure	: < 0.1 hPa (< 0.1 mmHg) at 20 °C (68 ° F) estimated
Evaporation rate (N-butyl acetate=1)	: Not applicable
pH	: Not applicable
Partition coefficient: n-octanol/water	: not determined
Water solubility	: < 0.0001 g/l estimated
Viscosity, kinematic	: not determined
Explosive properties	: not determined
Oxidizing properties	: See sections 3, 15
Decomposition temperature	: not determined
Pour point	: not determined
Melting point/freezing point	: 76 °C (169 ° F)

### Other information

DMSO extract by IP346	: Not applicable (mineral oil component only)
Coefficient of thermal expansion	: not determined

## SECTION 10. STABILITY AND REACTIVITY

<b>Reactivity</b>	: No dangerous reaction known under conditions of normal use.
<b>Chemical stability</b>	: Stable under recommended storage conditions.
<b>Possibility of hazardous reactions</b>	: Dust may form explosive mixture in air.
<b>Conditions to avoid</b>	: Excessive heat.
<b>Incompatible materials</b>	: Strong oxidizing agents
<b>Hazardous decomposition</b>	: No decomposition if used as directed.

**products****SECTION 11. TOXICOLOGICAL INFORMATION****Information on toxicological effects****Product**

Acute oral toxicity	: No data is available on the product itself.
Acute inhalation toxicity	: No data is available on the product itself.
Acute dermal toxicity	: No data is available on the product itself.
Skin corrosion/irritation	: No data is available on the product itself.
Serious eye damage/eye irritation	: No data is available on the product itself.
Respiratory or skin sensitisation	: No data is available on the product itself.
Germ cell mutagenicity	
Genotoxicity in vitro	: No data is available on the product itself.
Genotoxicity in vivo	: No data is available on the product itself.
Carcinogenicity	: No data is available on the product itself.
Reproductive toxicity	: No data is available on the product itself.
STOT - single exposure	: Assessment: No data is available on the product itself.
STOT - repeated exposure	: Assessment: No data is available on the product itself.
Aspiration toxicity	: No data is available on the product itself.

**Components:****Tolyltriazole:**

Acute oral toxicity	: LD50 Oral Rabbit: > 675 mg/kg Remarks: Harmful if swallowed.
Acute inhalation toxicity	: No data available
Acute dermal toxicity	: LD50 Dermal Rabbit: > 2,000 mg/kg Test substance: Read-across (Analogy) Remarks: Based on available data, the classification criteria are not met.
Skin corrosion/irritation	: Species: Rabbit Result: No skin irritation Method: OECD Test Guideline 404 Based on available data, the classification criteria are not met.

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Serious eye damage/eye irritation	: Not classified as an eye irritant, but may cause mild, short-lasting discomfort to the eyes.
Respiratory or skin sensitisation	: Species: Guinea pig Result: Not a skin sensitizer. Method: OECD Test Guideline 406 Based on available data, the classification criteria are not met.
Germ cell mutagenicity	
Genotoxicity in vitro	: Type: Ames test with and without metabolic activation Result: negative Method: OECD Test Guideline 471 In vitro tests did not show mutagenic effects
Genotoxicity in vivo	: (male and female)Method: OECD Test Guideline 474 GLP: yes Result: negativeBased on available data, the classification criteria are not met.
Carcinogenicity	: No significant adverse effects were reported
Reproductive toxicity	: Species: Rat Sex: male and female NOAEL: > 200 mg/kg, Method: OECD Test Guideline 421 Test substance: Read-across (Analogy) Based on available data, the classification criteria are not met.
STOT - single exposure	: Remarks: No data available
STOT - repeated exposure	: Remarks: No data available
Aspiration toxicity	: No data available

### Carcinogenicity

#### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

#### OSHA

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

#### ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Product:**

Toxicity to fish : No data is available on the product itself.

Toxicity to daphnia and other aquatic invertebrates : No data is available on the product itself.

Toxicity to algae : No data is available on the product itself.

**Components:****Tolyltriazole:**

Toxicity to fish : LC50 (Fish): 21.4 mg/l  
Exposure time: 96 h  
Harmful to aquatic life.

Toxicity to fish (Chronic toxicity) : Toxic to aquatic life with long lasting effects.

**Ecotoxicology Assessment**

Acute aquatic toxicity : Harmful to aquatic life.

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

**Persistence and degradability****Product:**

Biodegradability : No data is available on the product itself.

**Components:****Tolyltriazole:**

Biodegradability : According to the results of tests of biodegradability this product is not readily biodegradable.

**Bioaccumulative potential****Product:**

Bioaccumulation : No data is available on the product itself.

Partition coefficient: n-octanol/water : not determined

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### **Components:**

#### **Tolyltriazole:**

Bioaccumulation : study scientifically unjustified

### **Mobility in soil**

#### **Product:**

Mobility : No data is available on the product itself.

#### **Components:**

#### **Tolyltriazole:**

Mobility : Highly mobile in soils

### **Results of PBT and vPvB assessment**

#### **Product:**

Assessment : No data is available on the product itself.

#### **Components:**

#### **Tolyltriazole:**

Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT)., This substance is not considered to be very persistent and very bioaccumulating (vPvB).

### **Other adverse effects**

#### **Product:**

Additional ecological information : None known.

## **SECTION 13. DISPOSAL CONSIDERATIONS**

Disposal recommendations based on material as supplied, Disposal must be in accordance with applicable laws and regulations, and material characteristics at time of disposal

For the safety of persons conducting disposal, recycling or reclamation activities, refer to the information in Section 8, Exposure control and personal protection.

### **Disposal recommendations**

Product : The product should not be allowed to enter drains, water courses or the soil.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Dispose of contents/ container to an approved waste disposal plant.



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### Empty containers.

Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

## SECTION 14. TRANSPORT INFORMATION

### LAND (DOT)

Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(Tolyltriazole)

Class	9
UN number	UN3077
Packing group	III
Labels	9
Emergency Response Guidebook Number	171
Marine pollutant	yes

### SEA (IMDG)

Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(Tolyltriazole)

Class	9
UN number	UN3077
Packing group	III
Labels	9
EmS Number 1	0
Marine pollutant	yes

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Remarks	Not applicable
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### AIR (IATA)

Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(Tolyltriazole)

Class	9
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UN number	UN3077
Packing group	III
Labels	9

### SECTION 15. REGULATORY INFORMATION

#### National chemical inventory status:

List	Status
TSCA	: Listed
DSL	: Listed
AICS	: Listed
NZIoC	: Listed
ENCS	: Listed
KECI	: Listed
PICCS	: Listed
IECSC	: Listed
EINECS	: Listed
TCSI	: Listed

To import this product into the EU your company requires registrations and/or pre-registrations for all constituent substances that are subject to REACH registration. To discuss the possibility of setting up an Only Representative agreement with Infineum, please e-mail [Only.Representatives@Infineum.com](mailto:Only.Representatives@Infineum.com)

#### CERCLA Reportable Quantity

This material is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Contact local authorities to determine if other reporting requirements apply.

**SARA 311/312 Hazards** : Acute Health Hazard

#### EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO - KNOW

**SARA 302** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313** This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

#### US State Regulations

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### Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

### Pennsylvania Right To Know

#### Components

Tolyltriazole

29385-43-1

### New Jersey Right To Know Components

Tolyltriazole

29385-43-1

### California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

## SECTION 16. OTHER INFORMATION

Revision changes since the previous version are marked in the margins throughout this document

### Sources of key data used to compile the Safety Data Sheet

Canadian Controlled Products Regulations  
Canadian Environmental Protection Act (CEPA)  
Canadian Hazardous Products Act  
Canadian National Pollutant Release Inventory (NPRI)  
Canadian Transportation of Dangerous Goods (TDG)  
Canadian Workplace Hazardous Material Information System (WHMIS)  
US American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (exposure limits)  
US California Proposition 65  
US Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)  
US Department of Health & Human Services. National Toxicology Program  
US Department of Transport DOT 49 CFR  
US Hazardous Material Identification System (HMIS) III  
US National Fire Protection Association (NFPA) 704  
US National Institute for Occupational Safety & Health (NIOSH) (exposure limits)  
US Occupational Safety & Health Administration (OSHA) 29 CFR 1910.1200 (Hazard Communication Standard)  
US OSHA 29 CFR 1910.1000 - Table Z1 (exposure limits)  
US State Right to Know Acts: Pennsylvania, Massachusetts, New Jersey  
US Superfund Amendments and Reauthorization Act (SARA) 311/312. SARA 313  
US Toxic Substances Control Act (TSCA)  
Infineum studies  
International Agency for Research on Cancer  
International Air Transport Association: Dangerous Goods Regulations.  
International Maritime Organization: International Maritime Dangerous Goods Code  
Component supplier data

The information contained in this document is based upon data believed to be reliable at the time of going to press and relates only to the matters specifically mentioned in this document. Although Infineum has used reasonable skill and care in the preparation of this information, in the absence of any overriding obligations arising under a specific contract, no representation, warranty (express or implied), or guarantee is made as to the suitability, accuracy, reliability

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Revision Date : 05/11/2017

Prepared by : Infineum Product Stewardship and Regulatory Compliance

Issuing date : 05/12/2017

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006  
Version 4.0 Revision Date 28.12.2010  
Print Date 11.03.2011

GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product identifiers

Product name : Aminoguanidine bicarbonate

Product Number :

Brand :

CAS-No. : 2582-30-1

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

### 1.3 Details of the supplier of the safety data sheet

Company : Ningxia Xingping Fine Chemical Stock Co., Ltd.

Industrial Park, Pingluo County,  
Ningxia, China

Telephone : +86-952-6691110

Fax : +86-962-6681987

E-mail address :

### 1.4 Emergency telephone number

Emergency Phone # : +8613809041544

## 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]**

Skin sensitization (Category 1)

Chronic aquatic toxicity (Category 2)

**Classification according to EU Directives 67/548/EEC or 1999/45/EC**

May cause sensitization by inhalation. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### 2.2 Label elements

**Labelling according Regulation (EC) No 1272/2008 [CLP]**

Pictogram



Signal word : Warning

Hazard statement(s)

H317 : May cause an allergic skin reaction.

H411 : Toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P273 : Avoid release to the environment.

P280 : Wear protective gloves.

Supplemental Hazard : none

Statements

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)



R-phrase(s)

R43

May cause sensitization by skin contact.

R51/53

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

S36/37

Wear suitable protective clothing and gloves.

**2.3 Other hazards - none**

---

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**3.1 Substances**

Synonyms : Aminoguanidine hydrogencarbonate  
Guanylhiazine hydrogencarbonate

Formula : CH<sub>6</sub>N<sub>4</sub> · H<sub>2</sub>CO<sub>3</sub>

Molecular Weight : 136,11 g/mol

Component		Concentration
<b>Aminoguanidinium hydrogen carbonate</b>		
CAS-No.	2582-30-1	-
EC-No.	219-956-7	

---

**4. FIRST AID MEASURES**

**4.1 Description of first aid measures**

**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**

Flush eyes with water as a precaution.

**If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**4.2 Most important symptoms and effects, both acute and delayed**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**4.3 Indication of immediate medical attention and special treatment needed**

no data available

**5. FIRE-FIGHTING MEASURES**

**5.1 Extinguishing media**

**Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

- 5.2 Special hazards arising from the substance or mixture**  
Carbon oxides, nitrogen oxides (NOx)
- 5.3 Precautions for fire-fighters**  
Wear self contained breathing apparatus for fire fighting if necessary.
- 5.4 Further information**  
no data available

---

**6. ACCIDENTAL RELEASE MEASURES**

- 6.1 Personal precautions, protective equipment and emergency procedures**  
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust.
- 6.2 Environmental precautions**  
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
- 6.3 Methods and materials for containment and cleaning up**  
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.
- 6.4 Reference to other sections**  
For disposal see section 13.

---

**7. HANDLING AND STORAGE**

- 7.1 Precautions for safe handling**  
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.  
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.
- 7.2 Conditions for safe storage, including any incompatibilities**  
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
- 7.3 Specific end uses**  
no data available

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

**Components with workplace control parameters**

**8.2 Exposure controls**

**Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**Personal protective equipment**

**Eye/face protection**

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

### Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory protection

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder Colour: beige
b)	Odour	odourless
c)	Odour Threshold	no data available
d)	pH	8,9 at 5 g/l at 20 °C
e)	Melting/freezing point	Melting point/range: 170 - 172 °C - dec.
f)	Initial boiling point and boiling range	no data available
g)	Flash point	no data available
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	no data available
l)	Vapour density	no data available
m)	Relative density	1,56 g/cm <sup>3</sup> at 20 °C
n)	Water solubility	3,3 g/l at 30 °C 2,7 g/l at 20 °C
o)	Partition coefficient: n-octanol/water	no data available
p)	Autoignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

### 9.2 Other safety information

no data available

## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

no data available



- 10.3 Possibility of hazardous reactions**  
no data available
- 10.4 Conditions to avoid**  
Heat. Exposure to light. hygroscopic
- 10.5 Incompatible materials**  
Strong oxidizing agents, Nitric acid, Nitrites
- 10.6 Hazardous decomposition products**  
Other decomposition products - no data available

---

## **11. TOXICOLOGICAL INFORMATION**

### **11.1 Information on toxicological effects**

#### **Acute toxicity**

LD50 Oral - rat - > 5.000 mg/kg

LD50 Intraperitoneal - rat - 1.160 mg/kg

#### **Skin corrosion/irritation**

Skin - rabbit - No skin irritation

#### **Serious eye damage/eye irritation**

Eyes - rabbit - No eye irritation

#### **Respiratory or skin sensitization**

rabbit - May cause allergic skin reaction.

#### **Germ cell mutagenicity**

no data available

#### **Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

#### **Reproductive toxicity**

no data available

#### **Specific target organ toxicity - single exposure**

no data available

#### **Specific target organ toxicity - repeated exposure**

Ingestion - Liver

#### **Aspiration hazard**

no data available

#### **Potential health effects**

<b>Inhalation</b>	May be harmful if inhaled. May cause respiratory tract irritation.
<b>Ingestion</b>	May be harmful if swallowed.
<b>Skin</b>	May be harmful if absorbed through skin. May cause skin irritation.
<b>Eyes</b>	May cause eye irritation.

#### **Signs and Symptoms of Exposure**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

#### **Additional Information**

RTECS: FG1772000

## **12. ECOLOGICAL INFORMATION**

### **12.1 Toxicity**

Toxicity to fish

LC50 - Danio rerio (zebra fish) - 1.585 mg/l	- 96 h
LC50 - Danio rerio (zebra fish) - 1.000 mg/l	- 96 h

Toxicity to daphnia and other aquatic invertebrates.      Remarks: no data available

Toxicity to algae      Remarks: no data available

## 12.2 Persistence and degradability

Biodegradability      Chemical oxygen demand - Exposure time 28 d  
Result: 0 % - Not readily biodegradable.  
Method: OECD Test Guideline 301  
aerobic Chemical oxygen demand - Exposure time 28 d  
Result: 38 % - Not readily biodegradable.  
Method: OECD Test Guideline 302

## 12.3 Bioaccumulative potential

no data available

## 12.4 Mobility in soil

no data available

## 12.5 Results of PBT and vPvB assessment

no data available

## 12.6 Other adverse effects

Toxic to aquatic life with long lasting effects.  
no data available

---

# 13. DISPOSAL CONSIDERATIONS

## 13.1 Waste treatment methods

### Product

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

### Contaminated packaging

Dispose of as unused product.

# 14. TRANSPORT INFORMATION

## 14.1 UN-Number

ADR/RID: 3077

IMDG: 3077

IATA: 3077

## 14.2 UN proper shipping name

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Aminoguanidinium hydrogen carbonate)

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Aminoguanidinium hydrogen carbonate)

IATA: Environmentally hazardous substance, solid, n.o.s. (Aminoguanidinium hydrogen carbonate)

## 14.3 Transport hazard class(es)

ADR/RID: 9

IMDG: 9

IATA: 9

## 14.4 Packaging group

ADR/RID: III

IMDG: III

IATA: III

## 14.5 Environmental hazards

ADR/RID: yes

IMDG Marine pollutant: yes

IATA: yes

## 14.6 Special precautions for users

### Further information

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

---

**15. REGULATORY INFORMATION**

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
no data available**15.2 Chemical Safety Assessment**  
no data available

---

**16. OTHER INFORMATION****Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.